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THE AMERICAN
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JULY, 1862.

LECTURES, MONOGRAPHS, AND CASES.

Conservative Medicine. By AUSTIN FLINT, M.D., Prof. of the Principles and Practice of Medicine in the Bellevue Hospital Medical College, N. Y., and in the Long Island College Hospital.*

"WHAT does the writer mean by *Conservative Medicine?*" This will be the mental inquiry of the reader when the caption of this article meets his eye. It is desirable, first of all, for the writer to explain the subject which he ventures to hope will appear to possess interest enough to lead to a perusal of the pages which are to follow.

The meaning of *Conservative Surgery* is well understood. This phrase has been sufficiently common of late years. The conservative surgeon aims to preserve the integrity of the body. He spares diseased or wounded members whenever there are good grounds for believing that by skillful management they may be saved. He resorts to mutilations only when they are clearly necessary. He weighs carefully the dangers of operations, so as not to incur too much risk of shortening life by resorting to the scalpel. By conservative medicine, I mean an analogous line of conduct in the management of maladies which are not surgical. The conservative physician shrinks from employing potential remedies whenever there are good grounds for believing that diseases will pursue a favorable course without active interference. He resorts to therapeutical measures which must be hurtful if not useful, only when they are clearly indicated. He appreciates injurious medication, and hence does not run a risk of shortening life by adding dangers of treatment to those of disease. Such, in brief, is an explanation of the subject of this article. For the phrase *conservative medicine* I am indebted to a distinguished friend and colleague, well known as eminently a conservative surgeon.*

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* EDITOR OF NEW YORK MEDICAL MONTHLY:

Dear Sir—I send you, as proposed, the accompanying article, which was written at the request of my much esteemed friend, the senior Editor of the *North American Medico-Chirurgical Review*, and inserted in the closing number of that excellent serial. With the hope that the reproduction of the article in the pages of your Journal will prove acceptable to your readers,

I remain yours very truly, A. F.

During the last quarter of a century a change has taken place in medical sentiment as regards surgical operations. New and grand achievements in surgery seemed formerly to be the leading objects of personal ambition. To borrow a fashionable expression, they were decidedly the rage. Boldness in the use of the knife was the trait in the character of the surgeon which was most highly admired. The history of surgery during the first third of the present century is characterized by the introduction and frequent performance of numerous formidable operations. It was customary to speak of them as brilliant, and the daring surgeon enjoyed somewhat of the *éclat* which belongs to the hero of the battle-field. This analogy was implied when one of the greatest of our American surgeons, wishing to distinguish his most brilliant exploit, styled it his Waterloo operation. The change that has taken place is marked. We hear now comparatively little of terrible operations, and of that sort of heroism which is associated with bloody deeds. What would once have been considered as a degree of courage to be admired, is now stigmatized as rashness. It is an equivocal compliment to say of a practitioner that he is a bold surgeon. The change, it may be said, is in a measure due to the fact that the great number of new operations which have been introduced since the beginning of the present century leaves but a limited range for further explorations in that direction; but this explanation will go only a little way. The change is one of sentiment. The desire is to preserve the integrity of the body, to avoid mutilations, to incur the dangers of capital operations only when they are imperatively called for—in a word, conservatism has become the ruling principle in surgery. The most important of the most recent improvements in surgery exemplify the influence of this principle on the medical mind.

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* Prof. Hamilton.

An analogous change, within the same period, has taken place in medical practice. Formerly, boldness was a distinction coveted by the medical, as well as by the surgical practitioner. "Heroic practice" was a favorite expression, consisting in the employment of powerful remedies, or in pushing them to an enormous extent. The physician emulated the surgeon in daring. The change is not less marked in medicine than in surgery. We hear now oftener of diseases managed with little or no medication, than of cases illustrating the abuse of remedies. In the treatment of many affections it is not considered necessary to employ measures which, but a few years ago, it would have been considered culpable to withhold. The change, too, is here one of sentiment. We desire to preserve the vital forces, to avoid the perturbations and damaging effects of potential therapeutic agencies—in short, conservatism has become a leading principle in medicine as well as in surgery. The improved method of managing a host of affections will be found to illustrate this fact.

Before proceeding further, let us inquire how the contrast between medical practice at the present moment and a quarter of a century ago, should affect our estimation of medicine. Is medicine disparaged by the changes which have actually taken place? It is not enough to answer this question in the negative. Mutations, when they denote progress, are, of course, desirable. In so far as the contrast shows improvement, medicine at the present moment is deserving of esteem, the more, as the changes are great. It redounds to the glory of medicine that it admits of illimitable progressive changes. In this fact lies the distinctive feature of legitimate medicine as contrasted with illegitimate systems of practice. But, some one may say, is there to be no stability in medicine, no traditional authority, and is reverence for the past to have no influence? If not, where is our ground of confidence in the practice of the present day? And is it not probable that at the end of another quarter of a century mutations will have occurred twice as great as those which have taken place during the last twenty-five years? These questions are to be met fairly and squarely; let us endeavor so to meet them.

Waiving the consideration of what constitutes perfectibility in the *ars medendi*, and whether it be obtainable or not, no one will assert that medicine is now, or ever has been, in a condition not to admit of indefinite improvement. Improvement in its practical applications and results is the great end of the labors devoted, now and hitherto, to the different departments of medical knowledge, viz.: anatomy, physiology, animal chemistry, materia medica, pathology, and clinical medicine. We may assume that these labors, thus far, have not been profitless, and, accordingly, that practical medicine has improved. We may assume, also, that there is abundant encouragement to continue these labors, and, hence, that further improvement is to be expected—to what extent it is vain to speculate. It necessarily follows that stability in medicine is not to be counted upon; that the doctrines of to-day have no intrinsic claim to perpetuity; that because they are now in vogue is not a sufficient reason why they should not hereafter be modified or rejected, and that there is, to say the least, no ground to deny the possibility of the changes which are to take place hereafter being a whit less than those which have already taken place. What then? There are skeptics and scoffers with regard to medicine, and there are many persons who live and thrive by promoting popular distrust of it. It may seem to be giving aid and comfort to the enemies of medicine to concede that its past history abounds in errors, that present errors doubtless abound, leaving ample scope for future improvement. Be it so. We have nothing to do with skeptics, scoffers, and charlatans. We are not called upon to repel attacks prompted by ignorance, selfishness, and deceit. Yet it is desirable, with regard not only to the interests of the medical profession, but to the welfare of humanity, that medicine should hold its proper place in popular estimation. What, then, is the attitude to be taken as regards the just claims of medicine to public consideration and confidence? A body of men in every generation, from the time of Hippocrates to the present day, in all civilized countries, have conscientiously and industriously labored to acquire knowledge of diseases with reference to the relief of suffering and the prolongation of life. Under a host of difficulties and obstructions, many inherent in the pursuits themselves, and others proceeding from various extrinsic sources, the labors of physicians and their collaborators have continued and still continue. Now, granting that they have advanced slowly and often been led astray, where else can society ever seek for aid in the necessities of illness with a better prospect of success? Granting that they have failed, and still fail, in conferring all the benefit that is to be desired, and that, with the purest intentions, their efforts have been sometimes not only without avail, but hurtful, should the preponderating good be therefore overlooked, and is there any rational alternative but to accept good and submit to the limitations and errors incident to existing knowledge? All that society can claim of medicine in any generation is, the capabilities of the medical science in that generation. All that society can claim of physicians is, that these capabilities shall be understood and judiciously applied. But we are opening up trains of thought which will lead us a long way from our subject, and we must abruptly return to the consideration of conservative medicine.

It is an interesting point of inquiry, whence came the influences leading to conservatism as a principle of medical practice? The answer to this inquiry would not be the same in all countries and sections. It must be admitted that in our country the earliest and fullest development of the principle was in New England. Our New England brethren are fond of dating a new order of medical ideas from the publication of an address, more than twenty years ago, by Jacob Bigelow, on the self-limited character of certain diseases. Not underrating the importance of that publication, the spirit of the oral teachings of James Jackson and John Ware has exerted on the medical mind of New England an influence which can only be appreciated by those who have experienced it. To those who have known experimentally the value of their teachings, it is a source of deep regret that the influence of these admirable professors has not been more widely diffused by means of larger contributions to medical literature. British conservatists attribute much to the writings of Dr. Forbes. Among the non-medical observers of the change in practice which has taken place, some have been persuaded that it is due to the disciples of Hahnemann, an idea too preposterous to need refutation. The truth is, we are not to look for the causes of the change exclusively in the views emanating from particular persons. It is rather a legitimate result of scientific researches in different directions. If we were to specify circumstances which have more especially been instrumental in leading to the principle of conservatism, we would mention, *first*, the abandonment of the attempt to found a system or theory of medicine after the decline and fall of Brunonianism and Broussaisism; and *second*, the study of diseases after the numerical method with reference to their natural history and laws.

Strange as it appears, the importance of determining by clinical observation the intrinsic tendencies of different diseases as the basis of therapeutics, seems to have been heretofore overlooked. Physicians have acted on the presumption that most diseases do not pursue a favorable course without treatment more or less efficient. This has been, to a still greater extent, the popular belief. The apparent proof of the success of the Hahnemannic treatment rests on this belief. What are the facts already ascertained with respect to the intrinsic tendencies of different diseases? We know that diseases in the management of which, but a few years ago, the physician would not dare to omit potent therapeutical measures, almost invariably end in recovery without any active treatment. Take, as examples, pneumonia limited to a single lobe, and acute pleurisy. It is sufficiently settled that these diseases involve very little danger in themselves, proving fatal only in consequence of complications. The practitioner, therefore, no longer feels obliged to employ blood-letting, mercurialization, cathartics, blisters, etc., in these diseases, with reference to the saving of life. The only question is, do patients pass through these diseases as well without as with such measures of treatment? Clinical observation, following up this inquiry, arrives at results which exemplify conservative medicine.

Our acquaintance with the natural history of the great majority of diseases is, as yet, very incomplete. Knowledge of the tendencies of diseases allowed to pursue their course without active treatment, is not readily acquired. We cannot conscientiously withhold remedies which we have reason to believe may prove useful. Cases are therefore to be slowly accumulated in which, from circumstances not under our control, diseases have been uninfluenced by therapeutic interference. This knowledge, it is evident, is the true point of departure for the study of the effects of remedies as regards the termination and duration of diseases. The information already obtained has rendered the use of powerful therapeutic agencies far less common than they were but a few years since. It remains to be seen hereafter what will be the further effect on medical practice of continued researches in this direction.

Conservative medicine assumes that remedial measures, according to their potency, must either do harm or good; that they can never be neither hurtful nor useful. Prior to the advent of conservatism, this important fact was not duly appreciated. Blows were leveled at diseases, but the patient was not enough considered. It did not enter sufficiently into the calculations of practitioners that if successive blows dealt at a disease were misdirected, the effect was not lost, but injury was inflicted in proportion to their force. Hence, it must needs follow that the sick man sometimes encountered, in addition to his malady, assaults not less real because well meant. In this respect, certainly, we have evidence of progress. We are satisfied that we do not err in saying that the most judicious practitioners of the present day accept the following maxims of that eminently conservative physician, Chomel: *first*, that we are not so much to treat diseases, as patients affected with disease; and *second*, that not to do harm, is no less an object of treatment than to do good.

In defining conservative medicine, we have seen that it expresses a characteristic of the improvements in medical practice during the last twenty-five years. Let us now direct our attention to illustrations afforded by some of the different classes of remedial measures. And, first of all, blood-letting suggests itself. How great the change as regards this remedy! Twenty-five years ago it was employed as if it were an innocuous remedy. Practitioners thought much more of the risk of not resorting to it when it was needed, than of the evils of its being needlessly resorted to. Hence, they often acted on the rule inculcated by a medical writer, viz., when in doubt use the lancet. How different the rule of treatment now! Few practitioners of the present day would resort to this remedy in any case in which its appropriateness seemed to them questionable. Why not? Because it has been ascertained to be a spoliative remedy. It causes a disproportionate loss of the corpuscular elements of the blood, which are slowly regenerated. These corpuscular elements are already deficient in many diseases. In short, anæmia and its pathological relations were very imperfectly understood a quarter of a century ago. It is clear now to every one that, if not indicated, blood-letting should never be employed. This simple statement explains, in a great measure, the comparative disuse of blood-letting. The great question now is, whether it is a remedy called for more or less frequently in the management of certain diseases, chiefly the acute inflammations. I do not propose to enter here into a discussion of this question. This much may be said: Clinical observation, which is alone competent to settle the question, has shown that it is a remedy not called for so often or to so great an extent in acute inflammations as was supposed but a few years ago. A single incidental remark with respect to blood-letting, and it is one which will apply to other remedies: In determining its influence for good or evil by means of clinical observation, it is not enough to take into account the ratio of recoveries, and the duration of cases of disease. Blood-letting may not increase the mortality from a disease, nor protract its continuance, and, yet, prove injurious. The injury may be manifest only in the slowness of convalescence and the impaired condition of the system after recovery.

Cathartics were prescribed a quarter of a century ago much more generally and to a much greater extent than at the present time. In fact, purgation was considered as rarely out of place, whatever might be the nature or seat of the disease. This harmonized with the notion that very many diseases originated in, and nearly all were liable to be perpetuated by, causes acting within the alimentary canal. Abernethy's views of the constitutional origin of local diseases were generally received and acted upon, and with him the constitution and the bowels were almost convertible terms; constitutional treatment consisting in the nightly blue pill and the morning black draught. The great Sir Astley Cooper quoted with approbation the quaint saying of an old Scotch doctor, who declared that fear of God and keeping the bowels open were the chief requisites of duty for safety in this world and the world to come! The importance of purgation became deeply rooted in popular sentiment. Cathartic pills or potions were considered indispensable in every household, and it would hardly express the frequency with which they were used, to say that family devotions were far less common. These were the days when, as Stokes remarks, more truly than chastely, doctors seemed to have always in their minds "a cathartic and a potfull of fæces." In this day, when a change has taken place as respects the employment of purgatives, physicians suffer from the fact that it takes a long time to eradicate a firmly-fixed popular notion. Not only do we find it often embarrassing to reconcile patients to a different practice, but we are expected to inquire into, and carefully examine daily, by sight and smell, the excretions of patients, when we might otherwise consult our comfort (to say nothing of dignity) by dispensing with this exercise of the senses. The objects for cathartics, as now considered, are comparatively few, consisting chiefly in the removal of constipation, and their hydragogue operation in dropsy. They are no longer given as a matter of course, without definite indications. As perturbatory and debilitating agents, they cannot but do harm if not required, and their frequent repetition conflicts with nutrition, and thereby with sustaining measures of treatment. The change, as respects this class of remedies, thus illustrates the principle of conservatism.

It is needless to remind the reader familiar with the practice current twenty-five years ago, of the frequency with which emetics were employed. Of morbid causes referred to the alimentary canal, a large share were supposed to exist in the *primæ viæ*—an expression then often used by writers and in common parlance. The same notion taken up by the public was conveyed by the homely expression "foulness of the stomach." Emetics were prescribed by physicians to remove saburral matters, and vomiting desired by patients as a cleansing operation. Severe and prolonged vomiting by lobelia, in conjunction with the vapor bath, constituted the Thomsonian practice, which, in certain parts of our country, for several years, was considerably patronized. At the present time, emesis, irrespective of cases of poisoning and over-repletion, is rarely produced, excepting as incidental to the use of remedies not prescribed for that purpose, such as the nauseant sedatives, colchicum, veratrum viride, etc. What would be thought of a practitioner now who treated cases of phthisis with emetics repeated almost daily! Yet, within the memories of physicians of twenty-five years' standing, this practice has been advocated, and, to some extent, adopted. The progress of medical conservatism has led to the abandonment of emetics, as perturbatory and debilitating agents, excepting in the rare instances in which they subserve an explicit purpose.

The practice of the present time presents a striking contrast with that twenty-five years ago, as regards the use of counter-irritant applications. The physician whose professional career has already extended over that period, is sometimes reminded of the severe measures then in vogue, by the exhibition of indelible scars on the bodies of his old patients. He is not likely now to contemplate these traces of his former vigorous practice with lively gratification. Blisters, sometimes applied successively over the same space, and not diminutive in size, tartar-emetic ointment and plasters, issues, the moxa, etc., were considered as among the most efficient of the means of influencing the cure of a host of local affections. How much less frequently are they now used, and, when counter-irritation is deemed advisable, how much milder are the applications chosen! Physicians were strongly impressed with the belief that local affections were often removed by revulsion. They accepted the doctrine of Hunter, that two diseases rarely concur, and, hence, that an artificial disease is likely to effect a cure by a process of displacement. Not only has this doctrine been disproved by pathological researches, but these have shown a large number of the local diseases formerly regarded as primary, to be the secondary or tertiary effects of morbid conditions then unknown. Bright's disease had not been discovered, and its multitudinous pathological consequences were, of course, unintelligible. In those days solidism prevailed, and hæmatology has been since created. Physicians made no account of blood-poisons, and the old humoral notions of coction and fermentation had not been revived under the modern but equally indefinite garb of catalysis. Mr. Farr had not invented the name Zymosis, a name expressive of our ignorance, rather than conveying any precise knowledge, but, nevertheless, significant of a wide and most important leap from the doctrine of solidism; or, in other words, of a passage backward, guided by the light of modern science, to humoralism, which, as Rokitansky remarks, is simply a requisition of common sense. This change in pathological views, in conjunction with clinical observation, has led physicians to distrust, more and more, the value of counter-irritant applications, and, at all events, to conclude that severe revulsive measures are rarely called for; hence, the change in practice is in conformity to the principle of conservatism.

The contrast as regards the use of mercury affords a signal instance of progressive change. The remarkable efficacy of this remedy in certain affections naturally led to the expectation of its utility in many diseases. Mercurialization being a disease, it accorded with the current belief of the incompatibility of different affections, to suppose that it displaced other diseases. It was considered as *par excellence* an *alterative* remedy; and what a latitude for imagined results was afforded by that title! Moreover, its supposed special action on the liver accorded with the notion that the secretion of bile had much to do with morbid phenomena. The relief or prevention of portal congestion was incidental to its hepatic effects. It lessened exudations; it promoted the absorption of morbid products; it altered the secretions; it dispelled local engorgements, and, by exciting stomatitis, it acted by way of revulsion. Waiving here, as in the other instances, discussion of the actual value of this remedy, the extravagance of the views formerly entertained is now sufficiently evident. The statements of those who have made war upon this article of the materia medica, and the popular prejudices thereby produced, are equally, or still more, extravagant; but it is a remedy potent for harm when inappropriate, as it is powerful for good when indicated; and, therefore, the great change that has taken place as regards its use exemplifies conservatism.

These examples are sufficient to show how conservative medicine is illustrated by recent improvements as regards the employment of particular therapeutic measures. They furnish evidence of immense progress in practical medicine. Let not this statement be misunderstood. The improvements which have been noticed consist in the restricted use of blood-letting, cathartics, emetics, counter-irritants, and mercurials. Does the restricted use of these measures detract from their real therapeutic value? Not at all. Medicine has, by no means, repudiated them. She employs them with better judgment and discrimination; thus, availing herself of the good they can accomplish, she escapes the evils arising from their injudicious and indiscriminate use.

If we look at the progress of medicine during the last quarter of a century from another point of view, we find additional examples of conservatism. Regarding it exclusively from the point of view already taken, it appears that, in proportion as the practice of medicine has improved, reliance on certain active or heroic measures of treatment has diminished. This is true, but it is not the whole truth. Some measures are employed with much more freedom now than a few years ago. The use of opium and alcoholic stimulants, in certain diseases, affords the most striking illustrations of this truth. These instances also exemplify the principle of conservatism. Opium and alcohol, in excessive doses, occasion immediate disorder, of more or less gravity, and may destroy life. But given so as not to incur any risk of these effects, they do not conflict with conservatism, because their operation is transient, and, unless their use be continued, they do not leave behind them damaging effects. Given in quantities which are comfortably borne, they certainly do not impair the vital forces by perturbation, by loss of fluids, by affecting the constitution of the blood, or by inducing local changes, as do the measures previously noticed. This statement, of course, has nothing to do with the ulterior consequences, moral and physical, of intemperance or opium-eating. Here, too, as in other instances, discussion of the *modus operandi* of remedies is waived. Most physicians will agree in the statement that, when indicated as remedies, opium and alcohol sustain the vital forces. In this respect they are positively conservative. But a point of distinction is, when not indicated, if given within certain limits, and not continued, they are neither spoliative, exhausting, disturbing, nor disorganizing, as are various other measures, and, therefore, not, like the latter, even then, antagonistical to conservative medicine.

The contrast between the practice of medicine now and twenty-five years ago is not less marked, as regards the use of opium and alcohol, than as regards the restricted employment of other measures. Let the practitioner, who has seen service for a quarter of a century, consider what a responsibility he would once have taken in treating cases of pneumonia with brandy and opium, to say nothing of the continued fevers. The wonderful tolerance of these remedies in certain cases of disease is a recent discovery. Let the same practitioner consider whether he would once have ventured on a hundred grains or more of opium *per diem* in a case of peritonitis, or grain doses of the sulphate of morphia hourly, continued for several days, in a case of dysentery. Let him consider whether, at the commencement of his career, with the fulminations of Broussais on incendiary practice resounding in his ears, he ever dreamed of the propriety of giving quarts of spirit daily to fever patients, and of finding the frequency of the pulse diminished, and the mind become more clear under this heavy stimulation!

If we turn from remedial measures to dietetics, we find that the improvement which has taken place in practice contributes to the illustration of conservative medicine. In fact, conservatism is, perhaps, not less conspicuous in the contrast as respects the diet of the sick than in any other point of view. In cases of fever, and all acute diseases, twenty-five years ago, it was generally deemed an essential part of the treatment to withhold alimentary supplies. It was a frequent saying to patients who craved food, that to allow it would be to nourish the disease. In chronic affections, too, the diet was usually much restricted. It was believed that a large majority of diseases were attributable, directly, to dietetic imprudences, and that the over-ingestion of food, during the progress of diseases, was, of all indiscretions, the most prolific of evil. Physicians seemed to lose sight of the plain fact that the vital powers must languish in proportion as the alimentary supplies fall below the wants of the system, and that death may be produced by starvation in disease as well as in health. At the present time, a nutritious diet is considered as highly important in the management of fevers, as well as in diseases which tend to destroy life by exhaustion, and most physicians appreciate the importance of keeping the body well nourished in chronic affections.

Incidentally a point for remark is here suggested. Twenty-five years ago disorders of digestion, grouped under the name dyspepsia, were extremely frequent. Dyspepsia was the popular malady of the day. The number of dyspeptics, of late years, has greatly diminished. The malady is comparatively infrequent. Why is this? I believe it to be explained, in a great measure, by the fact that in the matter of eating, instinct has regained its rightful supremacy. We do not hear so much now, as then, of the liabilities to dietetic errors. Physicians are not so ready to attribute diseases to some imprudence at the table. The subject is not brought to the minds of the people by means of conversation, popular books on diet, public lectures and sermons. The healthy man no longer sits down to dinner with fear and trembling, lest he should eat too much, or indulge in improper articles of food. There are fewer patients who hold to the fanatical notion, that moral and physical health requires the demand of the system for food in sufficient quantity and variety, as expressed by hunger and appetite, to be resisted; and that the welfare of body and mind is promoted by living on a poor and insufficient diet. We rarely, now-a-days, hear the injunction, which was once impressed upon all who would preserve health, to adopt the habit of always rising from the table hungry. Nature and common sense have triumphed over these absurd ideas, and, among other advantages, dyspeptic ailments, which formerly tormented so many persons, have wonderfully diminished.

Recurring to the definition of conservatism in medicine, it suffices to say that it means the preservation of the vital forces. It is a principle in medical practice, covering everything which prevents impairment of, or tends to develop and sustain, the powers of life. The terms "vital forces" and "powers of life," although they are not readily explained, have a practical meaning, which is well enough understood, and it is unnecessary to enter into an explanation of them. It has been the object, in the foregoing pages, to give an exposition of conservative medicine, and to show that conservatism, in the sense in which the term is now used, is a distinguishing feature of medical practice at the present time, as contrasted with the practice which prevailed twenty-five years ago. The development and adoption of this principle have been seen to be results of the progress of medical knowledge, and the circumstances which seem especially to mark the beginning of the changes illustrating the principle are, abandonment of attempts to reduce the practice of medicine to a system, after the failure of the latest, viz.: Broussaisism, and the study of the natural history of diseases, as inaugurated by Louis. It is by no means, however, intended to ignore the fact that the cultivation of all the branches of medical knowledge has powerfully co-operated to the same end. The changes which have taken place during the last quarter of a century have not been due to a prior recognition of the principle of conservatism; but now that the changes have occurred, we find conservatism to be common alike to all, binding them together, and constituting their most striking characteristic. Having reached the principle thus analytically, are we not bound to recognize it as a fixed principle of medical practice, and one possessing great practical importance? Assuming it to be such, the remainder of this article will be devoted to its applications in the management of different forms of disease. And, first, let us consider the application of conservatism to the treatment of patients with inflammatory affections.

Theoretical views led to the measures called *antiphlogistic* in cases of inflammation. These measures, consisting of general and local blood-letting, cathartics, and rigid or restricted diet, were considered as antagonizing the state of inflammation; not unfrequently arresting its progress, and, when not successful in this end, diminishing its severity, limiting its morbid effects, and abridging its duration. As already remarked, the injury which these measures are capable of doing was overlooked; and, on the other hand, all will admit that their efficacy, in effecting the objects just stated, was greatly overestimated. Clinical experience has shown that we cannot rely upon these measures to arrest the progress of inflammation. Admitting the possibility or probability of success in a small proportion of cases, we are not justified in exposing patients to the injury produced if these measures do not succeed, when the chances are few that they will prove successful. This statement expresses a rule of conservatism applicable to all potent measures employed in any disease as abortive measures of treatment. Measures not impairing the vital forces are allowable, even when the probability of success is small. Opium, for example, is admissible as an abortive remedy when blood-letting is clearly inadmissible. But measures which, if not successful, will do harm, are only to be resorted to when the chances of success preponderate over those of failure. Conservatism, therefore, does not justify the employment of the antiphlogistic treatment with a view to the arrest of inflammation, without taking the ground that they invariably fail.

Clinical experience has rendered it doubtful whether the antiphlogistic treatment exerts much effect on the intensity of inflammation, its results, or its duration. Conservatism, therefore, dictates a careful weighing of the evils of the treatment against the chances of its usefulness as regards these objects.

It is not settled by experience that this treatment, carried to a greater or less extent, is always in no measure efficacious. Hence, there is room for difference of opinion, and the practice of different physicians will differ. The discriminating practitioner, who, although satisfied of the evils of the indiscriminate employment of antiphlogistic measures, believes in their ability, if judiciously employed, will be guided, in withholding or resorting to them, by the circumstances belonging to individual cases. And here it is that his practical knowledge, judgment, and tact are brought to bear on the management of inflammatory affections. Conservatism will dictate to such a practitioner not to employ blood-letting, etc., when the inflammatory affection, from its seat and degree of intensity, involves no danger, and when there is reason to suppose that it may pass through its course favorably, without active interference. Conservatism will dictate the same policy when all the local results to be expected from the progress of inflammation have already taken place, and the restorative processes only remain—a condition illustrated by the second stage of pneumonia, when all the exudation that is to occur has occurred, and the recovery involves only the absorption of the morbid deposit. Conservatism will dictate the same line of conduct in all cases of disease in which more danger is to be expected from failure of the powers of life, than from lesions incident to the local affection.

The value of therapeutic agencies is, of course, to be determined by experience. Developments in the progress of pathology, however, contribute to our knowledge of therapeutics, not only by giving direction to clinical observation, but by harmonizing with the conclusions drawn from the latter. It is interesting to note the consistency of the practical views now generally held as regards antiphlogistic measures, with late developments respecting the origin of certain inflammations. Inflammations not traumatic were formerly considered, and are now often called, spontaneous. We may use this term conventionally as distinguishing a local disease not referable to any obvious local cause, but, strictly, it is an absurdity to say that any disease is spontaneous. Every local affection must involve an adequate morbific agency acting on the part affected. It is true that our present knowledge does not enable us generally to appreciate the nature, sources, and the *modus agendi* of the proximate causes of inflammatory affections, but we have acquired, of late years, some information important in itself as a basis for analogical reasoning. Clinical observation has shown that the accumulation of urea in the blood is apt to lead to inflammation of serous structures. This we know, and it is a rational supposition that urea (or the products of its decomposition) induces inflammation, by acting directly on these structures. There are sufficient grounds for believing that the local inflammations occurring in gout and rheumatism are due to the local action of a *materies morbi* in the blood; perhaps the uric acid in the former, and the lactic acid in the latter of these diseases. Reasoning by analogy, we may expect with considerable confidence that future researches will show the so-called spontaneous inflammations generally to be produced in a similar manner. And with this view of their production, we should rationally expect great results, not so much from the antiphlogistic treatment, as from measures addressed to the morbid conditions of the blood which underlie the local manifestations of disease. To ascertain these morbid conditions in different diseases, to prevent the introduction or accumulation of morbific material in the blood, to neutralize the poisonous properties of this material, by causing the promotion of innocuous combinations, prevent the organico-chemical changes which its presence induces, (catalysis,) or to eliminate it through the emanations of the body—these are the great objects of therapeutics at the present day, which harmonize with the late revelations of pathology. Without stopping to inquire how far these objects have been obtained, it is to be remarked that they are obviously conservative, involving, as they do, protection against internal agencies inimical to life and health.

Conservative medicine thus dictates, in inflammatory affections, proper discrimination in the employment of the so-called antiphlogistic measures, which, if failing to exert a controlling influence, are necessarily hurtful, and, it may be, destructive, by impairing the vital forces. It also dictates the judicious use of remedies addressed to the internal causative conditions pertaining to the blood, so far as our present knowledge extends into these most important provinces of pathology and therapeutics. But this is not all. Conservatism often demands that the vital powers shall be sustained. Sustaining measures of treatment, practically considered, consist of tonics, alcoholic stimulants, and nutritious diet. We will not inquire as to the *rationale* of the operation of these measures. Suffice it to say, clinical experience shows abundantly that they lessen the degree to which the vital forces would otherwise be impaired by disease, and may prevent a fatal termination of disease by exhaustion. I have already admitted that the phrase "powers" or "forces of life" is metaphorical. Life is not an entity. But with a fair understanding that this personification of a combination of conditions, as yet but imperfectly understood, is merely for convenience, it is unobjectionable. The powers or forces of life enable the system to bear up under disease, to resist it successfully, and recover from it. On the other hand, we may say that disease destroys by overcoming the powers of life, whenever death takes place by asthenia or exhaustion. Every sagacious practitioner knows that certain symptoms, no matter with what disease they are associated, denote failure of the vital powers, or inability to resist disease. He estimates the amount of danger by these symptoms, among which those referable to the circulation are especially important. He often bases his prognosis far more on these symptoms than on the nature and extent of the local affection. Every practitioner knows that an inflammation, the same in all respects, so far as the local affection is concerned, in different persons, affects the vital forces differently. Take, for example, pneumonia, extending over the same space, and inducing an equal amount of changes, which physical exploration enables us to determine with accuracy: one patient manifests little disturbance of the system, and no symptoms denoting danger, while another patient will succumb to the disease. Every practitioner knows that some persons, who, in health, present no evidence of a lack of vigor, have very little ability to resist severe disease. They are quickly destroyed by affections which other persons readily endure, and endure, perhaps, without much inconvenience. Of course, these facts are explicable, but not with our present knowledge, and, until explained, it answers to refer them to differences as regards the vital powers or forces. They are facts of not a little practical importance.

Conservatism dictates sustaining treatment in any inflammatory affection whenever the symptoms denote failure of the vital powers, whether the period be early or late in the course of the affection. This treatment is to be pursued vigorously in proportion to the rapidity of the failure and the amount already taken place. It is important, in all dangerous affections, to watch for the first evidence of failure, and to lose no time in resorting to supporting measures. Such is the influence of traditional ideas, that these measures are frequently delayed from a timidity which experience is sure to remove. It is far wiser to enter on the use of tonics, stimulants, and a nutritious diet too early, or when not required, than to incur risk of delay, or their omission when required. In the one case, the liability of harm is small; but in the latter, lost time, which cannot be regained, may have been of immense importance to the patient. So far from incurring risk of damage from delay, the wise practitioner will anticipate the indications for support, and forestall the failure which he knows would otherwise occur. Physicians, however devoted to the antiphlogistic treatment of inflammations, have generally recognized the importance of supporting measures to "obviate tendency to death." When the flame of life is reduced to a glimmer, they would prevent it, if possible, from going out. Does not common sense teach that measures which may prove serviceable under these circumstances, would have proved much more so when the danger was less imminent? Is it not better policy to endeavor to keep the lamp of life burning brightly, than to depend on efforts to restore the flame when nearly extinguished? In cases involving danger to life, the importance of sustaining treatment is to be measured by these questions: Is the chief danger due to failure of the vital powers, and how great is the danger from this source? In cases not involving danger to life, the importance of support has reference to the duration of the disease, the rapidity of convalescence, and the condition of the recovery. The advantages derived from the proper application of conservatism, as regards sustaining treatment, in all operations, by no means consist exclusively in a reduced rate of mortality, but also in a speedy and rapid convalescence, and in the completeness of the restoration to health.

These remarks have had reference more especially to acute inflammations. Chronic inflammation affecting an important part may continue for a greater or less period, and recovery finally be complete; but during its continuance the powers of life are more or less impaired. It may destroy life by leading to incurable lesions, or by its protracted duration; in either case death usually taking place by slow asthenia. Under all circumstances, the affection is less likely to be prolonged, serious changes of structure are less likely to take place, and a fatal termination is postponed in proportion as the vital powers are preserved. Conservatism, therefore, dictates not measures to reduce, but those which sustain the powers of life in chronic inflammations. It dictates measures to develop appetite and improve the digestive processes, abundant nutritive supplies, and, in short, the remedies and hygienic means which invigorate and strengthen the body. The "building up" treatment, as it is significantly called, has contributed largely to the more successful management of chronic affections since the days of Broussaisism. Some of the most striking examples of the efficacy of this treatment which I have seen have been cases of chronic pleurisy, in which speedy and progressive improvement followed directly the substitution of this treatment for measures opposed to the principle of conservatism. These examples are the more satisfactory because, by means of physical signs, the improvement within the chest was accurately determined at the same time that the local and general symptoms denoted a favorable change. Certain cutaneous inflammations, and cases of ophthalmia, the parts in these affections being open to inspection, also afford examples not less striking.

Conservatism has been practically more fully applied to the management of essential fevers than of inflammatory affections. Since nearly all pathologists have admitted the essentiality of fever, and since physicians have ceased to agree with Southwood Smith in regarding inflammation as an almost constant concomitant and the chief source of danger in fever, the importance of preserving and sustaining the powers of life has been more and more appreciated, and, at the present moment, with the most intelligent practitioners, these are the leading objects in the treatment. In this remark I refer especially to fevers having a self-limited career, and not arrested by abortive measures. The periodical fevers are controllable by remedies having a special efficacy. These remedies are conservative, acting in an imperceptible manner, and, given within proper limits, producing no destructive or injurious effects, even if not indicated. It is a curious fact, that the fevers which we are able to arrest with great certainty, *i. e.*, the periodical fevers, continue indefinitely if not arrested, and return, sooner or later, and more or less frequently, in the majority of cases; whereas the fevers which we cannot arrest with any certainty, if at all, *i. e.*, the continued fevers, the eruptive, and yellow fever, have a fixed duration, and, as a rule, are experienced only once. It is not without the bounds of a reasonable expectation that the means of arresting the last-named fevers will hereafter be discovered. Reasoning by analogy, and from the pathological views now generally entertained, the means for this end must act by neutralizing a morbid material in the blood, or effecting its elimination; acting, therefore, in accordance with the principle of conservatism.

Tonic remedies, alcoholic stimulants, and nutritious diet are the measures for maintaining the vital forces during the course of the essential fevers. The importance of these measures is now so generally admitted as hardly to require argument or advocacy. The only questions for discussion relate to circumstances indicating their employment, the extent to which they are to be carried, and various details connected with their use. The discussion of these questions does not fall within the scope of this article. I may be indulged, however, in a few remarks on some interesting points connected with the subject.

One of these is the wonderful tolerance of alcoholic stimulants in certain cases of fever. Examples have been of late so often repeated, and are so generally familiar, that they need not be cited. How much at variance are the effects of pints, or even quarts, of spirit, given daily, with those produced in health! And how fully does this fact, as well as analogous facts relating to the action of opium and other remedies, illustrate the liability to error in judging of the operation of therapeutic measures in disease from experimental observations in healthy persons! How surprised, but a few years ago, would have been the therapeutist if told that the action of alcohol, under certain morbid conditions, is in fact sedative; in other words, that, in certain cases of typhus and typhoid fever, two or three ounces of spirit given hourly lessen the frequency of the pulse, diminish the heat of skin, and render the mind more clear! But the past history of medicine shows a tendency to push prevailing ideas to an extreme, against which the prudent physician should endeavor to guard himself. There is danger now of carrying the use of alcohol to an injudicious and dangerous extent. The principle of conservatism should be the guide. The object is to sustain the vital forces. The tolerance is in proportion to the need of this sustaining agent. If it be used excessively in all cases, without discrimination, it will sometimes do harm, and life may be destroyed by alcoholic poisoning. We have already seen that, within certain limits, alcohol is eminently a conservative remedy, because even when not indicated, it is not destructive, and its operation is transient; but beyond certain limits its effects may be poisonous, provided it does not fulfill indications showing that the system is tolerant of quantities which would be dangerous in health. Let the indications, then, in individual cases, be carefully observed, and let the effects be carefully noticed, so as not to violate, but conform, to the rule of conservatism.

Some interesting points are connected with the dietetic management in cases of fever. In perfect health, the wants of the system for alimentary supplies are expressed by hunger and appetite. Common observation, however, teaches us that these sensations are not essential as prerequisites to digestion and nutrition. Almost every one has experienced a state, certainly abnormal, but not dependent on any well-defined disease, and not interfering with the usual habits of mental and physical activity, in which food is taken habitually for a greater or less period without hunger or appetite, and nevertheless properly assimilated. Intense mental preoccupation and persisting depressing emotions may involve such a state. During the career of fevers, usually, hunger and appetite are wanting, but it is not to be inferred therefrom that the ability to appropriate nutriment is lost. Some have reasoned that the absence of the desire for food is always evidence of its not being needed, and a comparison has been made between the morbid condition, in this regard, in the essential fevers, and the natural state of hybernation. But the analogy holds good only as respects the disinclination for food. In hybernation, the respirations, the heart's action, muscular movements, and the functional exercise of all the organs, are reduced to the lowest point compatible with the preservation of life. In fever, the respirations are far oftener increased than diminished in frequency, and more oxygen enters the system than in health; the heart beats with unwonted frequency, muscular action is not wanting, and in the more frequent respiratory movements it is above the healthy standard; the mental faculties are sametimes morbidly active, and, from the absence of sleep, often more continuously so than in health; calorification is increased, and various functions of the body manifest disordered activity. It seems sufficiently clear that no practical inferences are to be drawn from a comparison between the arrest of hunger and appetite in fever, and the suspension of these sensations in hybernation. In hybernation the system has no need for alimentary supplies, and, hence, there is no physiological expression of the want of them. In fever, the morbid conditions prevent the feeling of this want, although the need of alimentary supplies continues.

The correctness of the statement just made rests on clinical observation. Patients with fever, taking food without inclination, and even with repugnance, retain it, and no disturbance is produced by its ingestion; the fæcal evacuations may present a normal appearance, and, in some cases in which a nutritious diet has been entered upon after the disease has existed for some time, there is an evident increase of muscular strength, although the career of the fever continues. These are clinical facts. And the conclusion is, digestion and nutrition are not incompatible with the state of fever, although hunger and appetite may be wanting. The faculty of perceiving these sensations is impaired or lost in consequence of the morbid condition of the nervous system, and, hence, they cease for the time to express the demands of the system. The perceptions are often so blunted that the mind takes no cognizance of other wants of the system. The urine is allowed to accumulate in the bladder, and, with the tongue desiccated, the patient manifests no desire for drink. Fatigue from lying continuously in the same position is not complained of. Local complications of the disease are not accompanied by pain. Under these circumstances, it is consistent that the sensations of hunger and appetite should not be experienced. The perceptive faculties, however, sometimes are not so much impaired as they appear to be. Desires and feelings may not be manifested from an extreme reluctance to make any exertion. Thus, patients not unfrequently drink with avidity when the cup is brought to their lips, who make no complaint of thirst; and in some cases, food, when presented, is also taken with relish.

In sustaining the powers of life in fevers, then, (and also in certain other diseases,) the physician is not to be restrained by the absence of hunger and appetite. He is to act with reference to the wants of the system by endeavoring to secure the ingestion of food, concentrated, containing the necessary variety of alimentary principles, and ample in quantity. Here, too, as with regard to alcoholic stimulants, it is far better to begin earlier than is needed, than run any risk of delay, and to give more aliment than is required than not enough. An appreciation of the importance of alimentation in fevers is among the most important of the recent improvements in practice which exemplify the spirit of conservatism. But in all acute diseases, whenever the chief end of treatment is to support the powers of life, a nutritious diet is essentially important, and the same rules with regard to dietetic management are alike applicable.

It will suffice to notice the application of conservatism to those chronic affections collectively which destroy by gradual inroads upon the powers of life. In this class are grouped such affections as carcinoma, tuberculosis, chronic dysentery, cirrhosis, and Bright's disease. It is sufficiently clear that, with a view to the prolongation of life, when recovery is not expected, the great object is to retard, as much as possible, the failure of the vital forces. If we cannot "build up," we may do much to delay the progress of destruction. Evident as this is, it is not sufficiently appreciated by all practitioners.

Patients affected with incurable diseases are too often abandoned to merely palliative remedies, the fatal issue being considered as merely a question of time, and, therefore, not of much importance. This question of time, however, may be highly important to patients and their friends. To aid in the cure of diseases is, undoubtedly, the first aim of the physician; and next to this, when a cure is not to be effected, comes the prolongation of life, with health more or less impaired. The last of the grand objects of practice are palliation and euthanasia.

In the management of any incurable affection, conservatism dictates the measures which, in general terms, contribute to keep the body in the best possible condition compatible with the continuance or progress of the disease. In this way not only the inroads of the disease on the powers of life, but the destructive lesions in the parts affected, are often stayed. It may be assumed to be a rule in pathology, that a local affection involving structural changes is less likely to progress with rapidity, the closer the approximation to health in all other respects. The practice which conservatism dictates in such cases is in accordance with this rule. An incurable lesion is sometimes so completely held in abeyance, and the system is rendered so tolerant of its continuance, that life may be preserved indefinitely, although a vital organ be affected. We meet with cases in which depositions of tubercle and carcinoma remain for a long period non-progressive and nearly innocuous. The conservative practice, moreover, favors those restrogressive changes by which even the diseases just named may eventuate in cure.

To consider the measures for keeping the body in the best possible condition, would be to enter on a large but immensely important domain of practical medicine. I must content myself with saying that they consist, first, of a nutritious diet; next, of remedies to strengthen and invigorate; and last, of hygienic influences directed to the same end. The hygienic influences comprise exercise and everything relating to regimen, change of climate, mental diversion and encouragement—in short, whatever can be brought to bear favorably upon the welfare and vigor of the system. The hygienic is certainly not inferior in importance to the medical treatment, and here it is that the judgment and tact of the successful practitioner are especially brought into requisition.

A comparison of cases of pulmonary tuberculosis now and twenty-five years ago, illustrates the importance of the practical views just presented. The management of this disease twenty-five years ago was certainly not in accordance with the principle of conservatism. The measures employed, medicinal and hygienic, were, indeed, directly opposed to this principle. The antiphlogistic system of treatment was often adopted, under the belief that inflammation was the most important element of the local affection. Blood-letting, cathartics, mercurialization, severe counter-irritation, were considered as remedial, and to these were conjoined low diet and confinement within doors. Now, pulmonary tuberculosis is not cured in the majority of cases, although it is not incurable; and there is reason to believe that the proportion of cures is considerably larger than under the treatment just referred to. But, directing attention to the incurable cases, under the plan of treatment generally pursued at the present time, which is eminently conservative, how striking the contrast! Formerly, the instances of rapid progress of the disease were more numerous, and it almost invariably advanced with a steady march, rarely occupying many months in completing its fatal career. Patients were usually confined to the bed for weeks before death, lingering on the borders of the grave, suffering from extreme debility, bed-sores, aphthæ, and colliquative diarrhœa. It was difficult to conceive of a picture more distressing and repulsive than that of an unfortunate being in the last stage of consumption. Conservatism has done much towards ameliorating the condition of consumptives, even when it is hopeless as regards recovery. Cases of so-called galloping consumption are less frequent. Life is not unfrequently prolonged and made comparatively comfortable for years. It is not uncommon to meet with instances of a considerable deposit of tubercle remaining quiescent or progressing very slowly, and the patient able to engage in the active occupations and enjoyments of life. Even when the disease is progressing to a fatal termination, the strength is usually so far preserved that a bedridden consumptive is now rarely seen, and it is not uncommon for patients to be out of doors almost up to the hour of their death. I appeal to those whose medical experience has extended over a quarter of a century for the truthfulness of this comparison.

In concluding these fragmentary remarks, let it be borne in mind that, important as is conservatism in medical practice, it is by no means inconsistent with the employment of efficient therapeutic agencies in the management of diseases. The conservative surgeon does not hesitate to use the knife and dismember the body, when convinced that thereby he may save life. So the conservative physician resorts without hesitation to his potential remedies—not less potent for good or evil than the scalpel—whenever he sees clearly that they will contribute to the safety and welfare of the patient.

Epilepsy. (*After the French of Herpin.*) By EDWARD SUTTON SMITH, M.D.

The idea generally entertained by the profession, that epilepsy is incurable; the prevalence of the disease in the United States, and its *curability* in France, have led me to translate the salient points of M. Herpin's celebrated work, with some additions drawn from my own experience in the treatment of this malady in America.

During a long residence in the French capital, and from a personal acquaintance with M. Herpin, who has now devoted more than thirty years to this disease *alone*, and whose practice is not only very great, but *successful*, I satisfied myself that epilepsy could be treated in the same manner, and with the same happy results, in this country. With the above slight introduction, I offer the following article, one of a series of two or three that I propose to write for the AMERICAN MEDICAL MONTHLY.

To show the estimation in which the work is held by the profession in France, I append the report of the committee chosen by the Institute to examine into its merits.

INSTITUTE OF FRANCE, *December* 16*th*, 1850.

Report.—" Dr. Herpin, of Geneva, has forwarded, under the title of Practical Studies in the Prognosis and Treatment of Epilepsy, a work composed, first, of thirty-eight observations relative to epilepsy, collected by the author; then an estimate of the different circumstances of these thirty-eight observations. These original materials serve as a basis, enabling the author to give, upon many of the symptoms of epilepsy, new views, and to determine the value of these symptoms from the double point of view of the prognosis and diagnosis of epilepsy. He also makes use of these same facts to study and compare the influence which every condition of age, sex, constitution, as well as different antecedent or concomitant diseases, may exercise upon the greater or less gravity of epilepsy, and the possibility of its cure. He again studies, under the same conditions, the good or bad influence which may be exercised by hereditary descent, menstruation, pregnancy, the married or single state, the degree of individual intelligence, social position, and finally, the length of time that the disease has existed. The importance of the subject studied by Dr. Herpin, the severity of the method which he has followed, in order to observe and arrange the facts, and lastly, the interest of many of the results which he has attained, have appeared to the Commission to merit a reward of fifteen hundred francs."

Every reflecting physician, when present at the cure of any disease, is compelled to demand what has been the influence of the treatment he advised. The reply, with the exception of a small number of cases free from difficulties, is environed with some doubt, unless the physician be endowed with a philosophic spirit. Consequently, this doubt, up to a certain point, surrounds all the precepts that direct practical medicine. By what means can we cause this uncertainty to disappear, and elevate therapeutics to a true science? We have already remarked, whatever may be the number of successful results that some special means has procured you in the treatment of a disease, you cannot affirm the utility of your course, and still less, place any value upon it, except in proportion as you can show that this disease, if left to itself, would have had different and less favorable results. In theory, the means of comparison can only be furnished by a natural and complete series of facts where the affection was left entirely to the efforts of nature. Now, there are but few cases where this purely passive observation is possible. Thus, forced to have recourse to more direct means in the midst of agents indefinitely varied and often contradictory among themselves, that are employed in diseases, is it not presumable that if some are efficacious, others are inert, and some hurtful? Thus, may we not conclude that a numerous series of facts, selected without reference to the methods of treatment, will give results which, admitting them to be a little more favorable than those of simple expectation, will not differ in any very marked manner? Consequently, may we not hope that at some future day we shall have a standard in each disease which shall serve as a common measure for all therapeutics upon the same disease? We have never doubted that this hope could be realized at some future day, for science already holds the elements of this work for a certain number of diseases. Meanwhile, nothing approaches nearer the wished-for guage than the comparative examination of opinions that have already been given upon the prognosis of a disease by a number of practical authors, chosen in different places and at different times, among the most skillful and conscientious.

The complete absence of statistical information upon the prognosis of epilepsy obliges us to resort to the latter means; fortunately, this affection is one of those where gravity, when left to itself, is so well known, that great exactitude will not be required.

The prognosis is either general or special.

It is *general* when limited to the calculation of ordinary chances, the cure, and mortality of a disease. The general prognosis of an affection is obtained by combining the results of a series of numerous facts. These results, particularly if they are expressed in numerals, will serve to show the actual merit of any treatment that has been employed in an entirely different series.

The questions that may be raised in the general prognosis of epilepsy, it appears to us, may be reduced to the three following:

Can epilepsy be spontaneously cured; and if so, what is the ordinary proportion of these cures?

Has medical skill any influence upon the favorable termination of this malady, and what are the limits of this influence?

In incurable cases, what are the results of this affection?

1st. We shall find in the history of medicine incontestable proofs that epilepsy has cured itself, though this fortunate result appears somewhat rare, according to Maisonneuve—about 4 in 100.

2d. According to the opinion of authors, it is well known that medical treatment has cured a certain number of cases of epilepsy.

3d. Without furnishing us with any very exact results in the cure of incurable epilepsy, our historical documents warrant our asserting that this malady is not incompatible with the prolongation of life, but that it shortens its length, altering more or less profoundly the intellectual and moral faculties.

Of the three questions that we have above mentioned, that which is the most important for us is the first, which treats of the spontaneous cure of epilepsy. We have seen that this result is quite rare, and estimating it at the rate of 4 in 100, we shall not be far from the truth.

In our examination, we shall consider separately two partial series of our own; the 38 cases of our first series we divide, according to their termination, as follows:

First Category.—Three cases where the treatment was only followed two or three days. One of these patients left my clinic; the two others remained epileptic, one being an idiot.

Second Category—First Section.—Two patients who were not treated, but spontaneously cured; one having had attacks for five years; the other, subject to turns of vertigo, after having but one in four years, has not had another for four years.

Second Section.—Seventeen cases that were treated, which is exactly half of the 33 patients that were more or less under treatment.

Third Category—First Section.—Three patients whose condition was ameliorated, though they only followed an incomplete treatment, and would probably have been cured had they been more persevering, judging from the results produced by the remedy when taken in an insufficient manner.

Second Section.—Four individuals in whom the treatment having been properly followed, evidently extended the interval between the attacks without causing them to disappear.

Fourth Category.—Nine cases, all obstinate.

The figures in these four categories afford us the following conclusions:

1st. Of 38 epileptics, 2 were cured without the aid of art; which gives the proportion of spontaneous cures in 19 cases, of about 5 in

100, which differs but little from the facts stated by Maisonneuve—4 in 100.

2d. Of 33 epileptics that were treated, 17, or 51 in 100, were cured; 7, or 21 in 100, were ameliorated; 3 of these by an incomplete treatment; 9, or 27 in 100, experienced no benefit under the influence of prolonged and varied treatment.

Thus, the number of our cures (without taking into consideration those who were ameliorated, two of whom, at least, very nearly approximated the cured,) is one-half. But the more these results differ from the opinion of the immense majority of practitioners, the more necessary it will be to answer in advance those objections that will be raised against these conclusions.

No one will dispute our obstinate cases; let us leave for a moment those who were ameliorated, and examine those cases that were cured. To these it may be objected:

That our diagnosis is wanting in exactness.

That our patients were cured by the interposition of nature alone.

That our cures were only greater or less suspensions of the accession, bearing in mind the returns which we call relapses.

1st. As to the exactness of our diagnosis, we merely ask any impartial man to look at the notes that accompany our observations, and read the chapter on the classification of the paroxysms. They will see that we have carefully studied the distinction between epilepsy, cerebral congestion, hysteria, &c.

2d. To those who merely see spontaneous cures in our cases, we place before them the prognosis of epilepsy, as given by all authors, without exception.

3d. This only remains, and will be the most specious objection of those who regard our cures as a simple postponement of the attacks. We will place before them a synopsis of our cases. Let us commence by the cases to the number of eleven, where there was no relapse.

Observation 7.—Duration four years; constant vertigoes every day; four attacks in three months, three of which took place in eight days; many suspensions by treatment during four years, the longest of which was eight months. Absolute cure, which has lasted *more than thirteen years*—(30th November, 1837, to the end of September, 1850.)

Observation 8.—Duration, five months; at the close many are daily. Cure, which has lasted *more than twelve years*—(March 13th, 1838, to the end of September, 1850.)

Observation 11.—Attacks during three months, many times monthly before the treatment. Cure, which has lasted *more than six years*—(August 16th, 1844, to the end of September, 1850.)

Observation 14.—Many paroxysms daily for fifteen days. Cure, which has lasted *more than five years*—(June 24th, 1845, to the end of September, 1850.)

Observation 15.—Two paroxysms and several vertigoes for a month. Cure, which has lasted *about five years*—(October 25, 1845, to the end of September, 1850.)

Observation 10.—Vertigoes for ten years, many in a month. Cure, which has lasted about *five years*—(November, 1845, to the end of September, 1850.)

Observation 20.—One single attack. Cure, which has lasted *four years*—(September 30th, 1846, to the end of September, 1850.)

Observation 22.—One single attack. Cure, which lasted *till the death of the patient*, *more than three years*—(October 14th, 1846, to November 13th, 1849.)

Observation 6.—Attacks for ten years; greatest interval, two months. Cure, which lasted *till the death of the patient*, *twenty-seven months*—(December 27th, 1840, till the 16th of March, 1843.)

Observation 18.—About one attack a week for three months; greatest interval, fifteen days. Cure, which lasted *till the death of the patient*, *more than five months*—(October 7th, 1849, to March 2d, 1850.)

If any one will compare, in the case of those patients that have not died, the time that has elasped since the last accession up to the close of my observations, with the ordinary interval of their attacks, it does not seem to me possible that any person can suppose that these are mere postponements in the course of the disease.

Let us now see if our cases of relapse are not really cures. They are six in number.

Observation 9.—Frequent vertigoes. Cure, lasting *seven* years. Relapse: more and more frequent vertigoes for a year, then an attack. Cure, (excepting a few turns of vertigo, which have ceased for the past four years,) which has lasted *more than nine years*—(September 30th, 1841, to September, 1850.)

Observation 12th.—Three attacks in three months. Cure, which has lasted *six years*. Relapse: two consecutive attacks. Cure, which lasted *five years and a half*—(March 16th, 1845, to the end of September, 1850.)

Observation 13.—Three incomplete attacks in sixteen months. Cure, which lasted *twenty-six months*. Relapse: a single accession.

Cure, which has lasted *six years and a half*—(February 19, 1844, till September, 1850.)

Observation 48.—Commenced at the age of sixteen years, (1812,) five years before the first menstruation. For six years, one or two attacks of epilepsy a week. Once had forty-eight in twenty-four hours, the consequence of bad treatment. At long intervals, some attacks of hysteria. Suspension of the attacks for three years, owing to some treatment of whose composition she is ignorant. Relapse, (1821:) for six years, two or three attacks every week; the longest interval being three weeks, (not counting three pregnancies, during which they completely ceased.) Attacks were more frequent at the menstrual periods. From 1828 to 1829 not a single accession: then two paroxysms of attacks in eight months. For four years and a half, isolated attacks, usually returning at an interval of about a year or eighteen months. In July, 1835, complete relapse, in consequence of a year's imprisonment: for ten months attacks almost daily; some ten or twelve in the same day. Six months after this relapse, I treated her four months. Cure, which, with the exception of two consecutive attacks in September, 1836, lasted till the death of the patient from an ovarian cyst, the 2d of August, 1850, *fourteen years* after the last attack.

Observation 62.—When this young girl came to my clinic, she had already had more than 1,200 attacks, preceded, for five years, by frequent vertigoes, that had been gradually converted into acces; these latter had, in their turn, been transformed into attacks, and are not comprised in the above account. During the first five months she was under my treatment, the number of attacks was exactly 2 a day. To-day (December 24th, 1851,) this young girl, after having had only 8 attacks in seven months, has been completely free from them for more than four months. Though half idiotic at the time of her first visit, she now enjoys the full use of all her faculties.

Out of 48 patients,

26 were cured	54	in 100.
10 ameliorated	21	"
12 incurable	25	"

From all which we deduce the result:

1st. That generally epilepsy is not spontaneously cured, nor does it take place in a twentieth part of the cases.

2d. That medical skill can benefit three-quarters of those who suffer from this terrible malady; that it can *cure* more than one-half, and produce a greater or less amelioration in a fifth part of the cases; and that the proportion of incurable cases is only one-quarter.

The criterion for epilepsy is found in the total number of attacks or accessions that the patient has had.

In the case of patients that have not had vertigo, or if they have not been very frequent, nor lasted more than ten years, we may be almost certain of effecting a cure.

As regards the attacks and accessions, the prognosis is entirely favorable if the number has been less than 100.

From 100 to 500 the chances are less favorable.

The prognosis is unfavorable if the attacks have been more than 500, *and in such cases a cure can only be regarded as an exceptional case.*

If it can be established that recent epilepsy is almost always curable, to render humanity an immense service, it is only necessary that the world should know the power of medical skill when taken in time; and every physician should be convinced, that with confidence, exactitude and perseverance, in the great majority of cases he may be assured of success. To attain this double object, every influential man, whatever his sphere of action, from this time forth, should endeavor, as far as epilepsy is concerned, to popularize the advice given by the poet:

> Principiis obsta, sero medicina paratur,
> Cum mala per longas invaluere moras.

No. 10 UNION SQUARE, NEW YORK.

Translations from the German. By C. A. HARTMANN, M.D., of Cleveland, Ohio.

VII. *Fibrous Uterine Polypi.* By Dr. C. HABIT, of Vienna.

Age seems to have some influence on the origin of these tumors, for they occur most frequently in more advanced years, (35–40;) rarely at 20, or beyond 50. Of 21 cases, 3 happened in virgins; 3 of the other patients had never been pregnant. The shortest time observed between the last delivery and the first appearance of the tumor was ten months; more frequently it extended to many years.

Symptoms.—First, increased and irregular menstrual discharges; next, blennorrhœa. Sometimes no pain; more frequently more or less violent pain, with heaviness and pressure in the pelvis, unremitting or periodical, like labor-pains. Obstipation of the bowels; œdema of the lower extremities; anæmia. All these symptoms continue for one or several years.

Most frequently the polypus arises from the posterior wall of the uterine cavity; sometimes from the cervical canal; occasionally even from a submucous fibroid tumor. Size varies from a hazel-nut to a child's head. Smaller polypi occur oftener than large ones. Most of them are pear-shaped; some globular or oblong; the larger ones appear flattened, conical, etc., according to their situation. Surface usually smooth, polished, but may be fissured or rough; corroded; excavated by partial ulceration or mortification. In consistence all these tumors are elastic; the smaller ones soft and succulent; those of large size more compact, and indurated. During menstruation they are soft, vascular, swelling. The pedicles are of different thickness and length, the thinner the longer, and this especially in small polypi. Chronic hyperæmia of the womb, inflammation and adhesions of all the internal generative parts, are almost inevitable consequences of the more voluminous tumors. In structure they exhibit externally frequently a very thin mucous membrane; beneath it a varying layer of uterine substance. Cellular tissue surrounds the tumor proper, which is composed either of a homogeneous fibrinous mass, or lobes, or irregular conglomerations.

The diagnosis is generally readily established by vaginal examination. In most cases the tumor is partly or entirely out of the womb, and can hardly be confounded with inversion of that organ or medullary fungus. The symptoms of intra-uterine polypi are more obscure; enlargement of the womb, menorrhagia, metrorrhagia, blennorrhœa, labor-pains, etc., belonging to other affections also. In such cases the os should be dilated by means of compressed sponge.

Treatment.—Excision by means of Siebold's or Chiari's scissors, or Mikschik's thimble instrument. Two-fifths of those operated in this manner died mostly from subsequent pyæmia. Torsion is only applicable to a small polypus with a thin pedicle. Ligatures are not always successful; they ought to be applied with the assistance of instruments. The selection of any of these methods must depend on the circumstances of the case. Generally, the operation should be deferred until the greater portion of the polypus has left the womb. Up to that time should be done whatever is indicated by hæmorrhages, blennorrhœa, anæmia. Very large polypi, filling the whole pelvis, and those having a large basis, ought to be left undisturbed. Excision is preferable where the pedicle does not exceed a finger in size, and the tumor is not very extensive; ligature, where excision is impracticable because the pedicle is not very accessible or very thick, the polypus itself concealed or voluminous. The ligature should be applied as far as possible from the insertion. Extirpation by means of the *écraseur* or the galvano-caustic loop, offers no particular advantages.—(*Zeitschr. d. Gesellsch. d. Aerzte zu Wien.*)

Transactions of the Medical Society of the County of Kings.

REGULAR MEETING, SEPTEMBER, 1861.

Fatty Degeneration of the Heart—Atheromatous Disease of the Coronary Arteries and Aorta. Specimens presented by Dr. J. C. HUTCHISON.

They were removed from the body of a clergyman 53 years old, who died after two hours' illness. He was a robust, vigorous man, and enjoyed good health with the exception of occasional attacks of severe pain, which he referred to the epigastrium, and now and then a slight diarrhœa. He ate his dinner as usual at 5 P. M., on the 4th October, and was occupied from this time until two o'clock on the following morning in writing a sermon, when he was seized with one of his usual paroxysms of epigastric pain, and died at four o'clock, without medical attendance. He had no cephalalgia, no stertor, and his intelligence was undisturbed during his illness. A coroner's inquest was held before the post-mortem was made, and without medical evidence a verdict of "Death by Apoplexy" was rendered. Dr. H. subsequently made the post-mortem, 77 hours after death, at the request of his family physician. There was a large deposit of fat in the subcutaneous cellular tissue, and around the kidneys and heart, and in the omentum. The thoracic and abdominal organs were healthy, except the heart and arteries. The *heart* contained semi-fluid blood; its tissue is in some degree paler and softer than in the natural state, and is very easily torn; the valves are healthy; an atheromatous deposit is seen in the neighborhood of the mitral valves; the greater part of the circumference of the *aorta* throughout its whole course is beautifully studded with irregular patches of atheroma. Towards the lower part of the vessel, and also in the right primitive iliac artery, some calcareous patches can be seen. The *coronary arteries* contain the same deposits that are found in the aorta to an extent that must have materially interfered with the nutrition of the heart. The *liver* was fatty; the *gall-bladder* was filled with bile, and contained a gall-stone the size of a hazel-nut, with a very rough surface studded with cholestearine crystals.

The paroxysms of pain with which the patient suffered were probably due to the diseased condition of the heart.

Dr. J. H. HOBART BURGE presented to the Society a new instrument for removing foreign bodies from the œsophagus and trachea. It is a pair of forceps so constructed that a gentle movement of the handles, by means of the thumb and index finger, causes the blades to open and shut while the rest of the instrument remains apparently motionless. This is effected by the rolling character of the hinge which connects the two blades, and which extends throughout the whole length of the straight portion of the instrument—about six inches. The handles are at a right angle with the blades, and are consequently out of the line of the operator's vision. The blades are rounded and smooth upon their outer surface, flat and slightly roughened where they are in apposition, and when closed form a simple curved style of the most convenient size, and which may be manipulated with less danger of exciting spasmodic action than generally attends the introduction of instruments into these passages. Dr. B. expressed the hope that this simple contribution might prove an additional means of relief in a class of cases annoying to the practitioner, and distressing, if not dangerous, to the patient. He suggested also its use for the removal of pseudo-membrane in diphtheria and croup, and for the removal of small calculi, pieces of gum bougie, etc., from the urethra. Manufactured by George Tiemann & Co., 63 Chatham Street, New York.

REGULAR MEETING, OCTOBER, 1861.

Case of Disease of the Heart. By Dr. WM. GILFILLAN.

I was asked to visit James Fannin, aged 37, a grainer by trade. I found him sitting up in bed; countenance sallow, and slightly bloated; conjunctiva yellow; general anasarca; very great œdema of scrotum, which gave him much pain; urine scanty, and high-colored; bowels regular.

Great difficulty of respiration; cardiac palpitation; pulse feeble—100 per minute, and irregular. He had been a steady drinker of ardent spirits, but was seldom intoxicated. Never had rheumatic fever; sometimes had pains in his joints, but not sufficient to prevent him from working. A year ago he was very ill, with what *was called* "dropsy of the brain." He lay perfectly unconscious for two days, and finally recovered. He had no convulsions. On examination of the chest, there was great heaving of the precordia. Transverse cardiac dullness extended from the right edge of the sternum to within half an inch of the left nipple. Superior limit of dullness at third costal cartilage. Impulse of apex in sixth intercostal space. On auscultation, there was considerable difficulty in recognizing the different sounds, owing to the tumultuous action of the heart. After a careful examination, they were as follows:

At the base a loud systolic bruit, with a whistling character. Second sound changed; very weak, and a slight murmur. At apex there is also a loud systolic bruit; it is less distinct, and softer in its tone. At the xiphoid cartilage there was a loud systolic bruit, and a weak, ill-defined murmur with second sound. On listening over the carotids, a loud blowing murmur was heard, synchronous with the pulse.

He has a good deal of cough and expectoration, but no blood in it. Slight dullness at both bases posteriorly, and loud subcrepitant and mucous *râles* over back of chest.

The diagnosis was: Aortic obstruction and some regurtitation, with also mitral regurtitation from dilatation of the heart.

The prognosis was very unfavorable; the amount of dropsy showing a serious obstacle to the free circulation of the blood, which, being of long standing, interfered seriously with the functions of the lungs, by serous effusion and infiltration.

I determined to try diuretics, and gave, for this purpose, a mixture of acetate of potash, digitalis, and spirit of juniper. I punctured the legs and scrotum with a lancet, to allow free drawing of fluid.

September 3.—The punctures discharged freely, and are not inflamed; dropsy much diminished; coughs little; pulse 90, and feeble. Stethoscopic signs unchanged. Urine high-colored; free from albumen; about two quarts daily.

Continue medicine, and take a little, given every four hours.

September 6.—He died at 4 A. M. Had slight diarrhœa for two days before his death.

Autopsy seven hours after death—present, Dr. Dudley.—Body still warm; very little œdema. On opening pericardium, about two ounces of straw-colored fluid in the sac. The anterior surface of heart was normal, while the posterior and left side, towards the base, was attached to the pericardium by moderately firm adhesions. Towards the apex where there were no adhesions, there were spots of ecchymosis scattered. Much fat was deposited over the right ventricle and auricle. The heart was enormously hypertrophied. I estimated its weight at 20 or 22 ounces.

The aortic valves permitted some regurgitation. On opening the left ventricle, the walls and columnæ carnæ were enormously hypertrophied. The thickness of the wall at its thinnest part was 1½ inches. The vertical diameter of the ventricle was 4½ inches, its transverse 3½. A large, firm, decolorized clot adhered to the mitral valves, and a portion of it hung loose in the cavity. The mitral valves were healthy in structure, but insufficient to close the orifice, owing to dilatation of the cavity. On opening the aorta, there were found only *two* valves, one larger than the other. The large one contained in its centre a calcareous deposit running from the free margin to the attached, and covered by the lining membrane of the arteries. The ventricular surface of the valves showed numerous small vegetations of a bright-red color. They were the size of a pin's head, and were grouped irregularly in masses.

The tissue of the heart was not softened, but it was pale. The coronary arteries were healthy. The right side of the heart was healthy, and slightly hypertrophied.

Both right and left lungs were firmly adherent to the pleural costa. They were free from tubercles—other organs not examined.

Thus the appearances found after death explain very beautifully the stethoscopic signs during life. Although a great obstruction to passage of the blood through the aortic orifice existed, yet there was little reflux. The whistling sound was caused by the *vegetations.*

REGULAR MEETING, NOVEMBER, 1861.

Dr. BENNET reported a case of miscarriage, occurring in a lady about 40 years of age, of good general health.

She was seized with uterine pains about the 30th September, attended with moderate hæmorrhage. She supposed herself about six weeks advanced in pregnancy.

She treated herself domestically for about six days, during part of which time the flooding was very profuse, and unattended by pains. Finding that she was "no better, but rather grew worse," she called in other advice.

By this time she was found greatly exsanguinated—pale, extremely prostrated; pulse feeble—about 60 per minute. Tongue not coated—(she had taken two or three doses of castor oil, during the week past.) Some tenderness at the epigastrium; extreme tenderness in the hypogastric region, with a largely developed uterine tumor, extending to the right and left sides.

At present considerable sanguineous discharge, with slight pains, and accompanied by purulent matter of most offensive odor.

The bowels were in good condition, from the castor oil the patient had taken.

The indications seemed imperative for opiate and astringent treatment, with stimulants, &c. Pulveris opii and capsicum, āā., gr. i., with acetum plumb., gr. iv., were directed to be taken every hour, with brandy and water pretty freely, till reaction should be secured.

By the next morning some reaction had taken place, with less sanguineous discharge; more uterine pains; increased pain upon pressure over the womb; pulse weak; countenance dejected, and anxious; voice very feeble.

The case was now diagnosed as metritis, from severe congestion, and probable absorption of pus. An examination per vaginam detected no remains of the secundines.

As the discharge was still too free, the same treatment was continued for the present, only the medicines changed from powder to pill form.

By evening slight improvement had taken place. One pill had caused abatement of the discharge, and no more were taken. The pains were less, the tumefaction slightly decreased, as well as the tenderness.

Dr. B. considering most cases of miscarriage to be caused by cold, taken on a bilious condition—and that the early administration of *alteratives*, and, if necessary, *laxatives*, is called for—and that this was one of those cases—prescribed 5 grs. of blue mass, to be taken every three or four hours.

Very soon the alterative effect was obtained, and the patient greatly relieved—the swelling and tenderness subsiding rapidly; and with gentle stimulants and tonics, nourishing diet, &c., she passed favorably, and speedily, through convalescence to entire recovery.

The noticeable features of this case are:

1st. The long time the disease progressed without treatment calculated to arrest it.

2d. The exsanguinated condition, and consequent prostration.

3d. The perilous stage to which the inflammation had advanced, increased by the probable absorption of pus.

4th. The speedy relief, and recovery, from so far advanced and dangerous conditions of disease.

REGULAR MEETING, DECEMBER, 1861.

Paper on Polypus Uteri. By WILLIAM GILFILLAN, M.D.

[Communicated, by direction of the Society, to the Medical Society of the State of New York, Session of 1862.]

MR. PRESIDENT AND GENTLEMEN—In presenting the following case of polypus uteri to the notice of this Society, with the view of causing discussion on the subject, I will first briefly relate the circumstances of the case.

On the 7th May, 1860, I was requested to see the patient on account of severe flowing. On my arrival at the house I found the patient had fainted from loss of blood, and was then slowly reviving.

I ascertained the following particulars: The patient, Margaret S., 23 years old, and unmarried; of dark florid complexion and spare build. From infancy she had enjoyed good health until November, 1859. At that time being on a visit some distance from home, she got wet feet, and dates the origin of her complaint to that exposure. Previously her menses were rather copious, but free from pain. Since November she had a constant dragging pain in the right side, and occasionally severe menorrhagia. Menstruation began three days ago, and was profuse from the first and steadily increasing, and weakened her so much that after the first day she kept her bed.

I now found her with cool, clammy skin; countenance completely blanched; pulse 100 per minute, and feeble; tongue moderately clean.

The flow still continued, and of a bright red color, but smaller in amount; napkins and bed-linen were saturated with it. On manipulation over the abdomen the uterus could be felt distinctly above the pubes, enlarged. Vaginal examination was objected to. The uterine enlargement having raised suspicions in my mind, especially accompanied with so much hæmorrhage, I questioned the patient and her friends closely, but I could elicit nothing material or suspicious.

I gave directions to raise the pelvis and apply cold water and vinegar to the vulva and hypogastrium. I ordered ten grains of gallic acid every three hours, and ice-water acidulated with aromatic sulphuric acid as a drink, and an opiate, at once. Next day, May 8th, feels a little better, but very weak; slight flowing still; uterine enlargement as before; continued treatment.

May 9th.—Very little flowing; pulse 90, rather weak; tongue rather furred, and bowels not moved for five days. I ordered ten grains of gallic acid three times a day, and some rhubarb and jalap to move the bowels.

May 10th.—The purgative acted freely; the flow increased for a time afterwards, but there is very little, scarcely any, to-day. Tongue moist and moderately clean; prescribed quinine, 4 grs., every three hours; omit the gallic acid.

12th.—Appetite improving; pulse 80. There is now a pretty free watery discharge from the vagina, occasionally tinged with blood. On the 14th of May she sat up for a short time, and from that date improved very rapidly.

She thought herself quite restored to health, and was married on the 2d July.

In September she called on me, complaining of menorrhagia, for which I prescribed gallic acid.

November 10th I saw her again. Since her marriage she had been residing in New York. Last month she had an attack similar to that she had in May. She suffered more pain, but did not lose nearly as much blood. Her physician called it "*inflammation of the womb.*"

She had now constant pain in the back, a dragging pain in the right side and hypogastrium. Constant leucorrhœa in the intervals of menstruation; the latter coming on twice a month, and only leaving about five days' interval.

Her countenance was now sallow and haggard, and indicative of great and prolonged suffering, and her strength was rapidly giving way from such a constant drain upon her system.

On manipulation over the abdomen, the uterus could be felt enlarged somewhat. I now made a vaginal examination, and felt a smooth, soft body projecting through the os uteri, nearly a quarter of an inch. It was not sensitive to touch, and I could partly introduce the point of my index finger in the os, but I could feel no attachment or pedicle after passing my finger around. With the speculum I could see a dark purplish mass projecting through the os.

Having no doubt in my mind that I had now to deal with a polypus uteri, I told the patient that it required an operation for its removal, and advised her to have it done as soon as possible. She readily consented to anything that would cure her. She had ceased menstruating the day previous, and I thought that in two or three weeks the polypus might descend lower, so as to give greater facility for its removal.

November 20th I saw her again. There was great leucorrhœa. On making a vaginal examination, I felt the os uteri dilated the size of a quarter, and the polypus not protruding in the least. I was disappointed and somewhat surprised at this state of affairs, as I thought the polypus would have protruded still farther. I now prescribed fifteen grains of powdered ergot three times a day, hoping to arouse uterine contractions, and so force the polypus through the os uteri.

November 22d.—Dr. Chapman visited the patient with me. She had now taken a drachm of powdered ergot. She felt giddy, suffered from noise and uneasy sensations in the head; slight nausea. Her countenance was very pale; pulse 60. Perceiving that we had now present the narcotic effects of ergot, its use was suspended. There was no change in the uterus, and the pedicle could not be felt, the finger passing readily around the polypus.

On the 24th she began to take twenty drops of fluid extract of ergot three times a day. As the narcotic properties of the drug are contained in the oil, the fluid extract was chosen, so as to obtain its effects on the uterus without narcotism.

On the 28th November Dr. Chapman saw her again with me. There was a slight discharge of blood; she felt pain in the womb soon after taking each dose of ergot.

On examination, we found the polypus protruding nearly half an inch beyond the os. It surface was smooth and vascular, and of a purplish hue. By placing one hand over the abdomen, and forcing down the body of the uterus with the forefinger of the other, we could pass through the os, and tracing up the polypus, we could feel the pedicle springing from the fundus uteri. The pedicle was so very short we could not correctly estimate its size. The polypus appeared to be the size of a small orange. The uterine sound passed freely around the polypus on all sides, and the pedicle was felt at the top. Owing to the pedicle springing from the fundus, it was impossible for any uterine contractions to expel the polypus without producing at the same time inversion of the uterus. It was determined to remove it as soon as possible. She was ordered to continue the ergot, and to have the bowels moved by castor oil. From the extreme shortness of the pedicle, and its situation at the fundus, we believed it would be very difficult to carry a ligature around it. We determined to try and remove it by torsion, and failing that, the ligature.

November 30th.—Assisted by Drs. Chapman and Dudley, I proceeded to operate. To guard against hæmorrhage afterwards, we gave thirty drops of fluid extract of ergot, to cause firm uterine contraction. On examination, the os uteri was nearly the size of a half dollar, the polypus pressing closely against it. I used a pair of long, slender, hinged forceps, fenestrated. So closely did the uterus envelop the growth, that I could only introduce *one* finger with the forceps through the os, for fear of lacerating it. Perhaps the contractions by the ergot increased this difficulty. With the left middle finger as a guide, I introduced the forceps. Some difficulty was encountered in getting a proper grasp of the polypus, arising from the difference in the *axis* of the cavities of the vagina and uterus. A firm hold of the polypus near its pedicle being obtained, the handles were securely tied together, to prevent slipping.

I now gently twisted the growth on its axis three or four turns, and on using a little traction the polypus came away. It came off level with the uterine walls, a fact ascertained by Dr. Chapman and myself. There was no hæmorrhage. No anæsthetic was given, and the patient said she felt very little pain, and was surprised when told it was over. I gave her one-eighth of a grain of sulphate of morphia immediately.

The polypus was the size of a pullet's egg, firm and fibrous. The mucous membrane covering it was of a dark livid color, but not ulcerated anywhere. The pedicle was in circumference equal exactly to a three-cent piece.

Three hours after the operation I saw her again. She was very cheerful, and free from pain. Pulse 84. On the napkin was one spot of blood the size of a quarter.

Next day she said she had not been so free from pain for many months, and felt quite delighted. There was no vaginal discharge. She remained, by my orders, in bed for two days. After the fourth day she moved about the house as if nothing had happened, and she very rapidly gained flesh and strength.

I saw her on the 20th January, 1861. She was then a perfect picture of health, and her cheeks quite rosy. In the interval she had menstruated once; it lasted three days; small in amount, and free from pain.

In the beginning of May I saw her again. She remained perfectly well, and felt no inconvenience of any kind, and was remarkably healthy in appearance.

A few weeks ago I had an opportunity of seeing this patient; she remains free from any suffering or inconvenience, and I may state that she has never been pregnant.

I would here remark, that by a simple and speedy operation, this patient was relieved of very great suffering, and freed from a hæmorrhage which was undermining her constitution rapidly, and might at any time prove fatal; that the system suffered very little or none at all from the operative procedure, and that the relief was *immediate*, and, as we believe, *permanent*.

The diagnosis of polypus is often attended with difficulty. More especially is this the case under two different circumstances: In one case there is great difficulty when the polypus is intra-uterine, and the os and cervix uteri are unexpanded. In another case, we have difficulty when the polypus is large, and grows from a lip of the os; its bulk distending the vagina, and completely concealing the os uteri, except after the most laborious and minute search. In the latter case it may be confounded with inversio uteri, and to correctly distinguish it from this condition, we must find the os uteri by careful and repeated examinations. The uterine sound, in such a case, must be our main reliance. If we can pass the sound through the os into the cavity of the uterus, our doubts are solved. To do this, however, is infinitely more simple on paper than it is in practice.

When the polypus is intra-uterine, with the os undilated, a certain diagnosis can scarcely be arrived at until, by the use of sponge-tents or other means, the os is expanded, when there is generally little difficulty. But when the os uteri is expanded, and the polypus of moderate size, there is usually no doubt in making our diagnosis at once. In the case which I have now read, there was no difficulty in diagnosis; a simple digital examination established the fact of a polypus, but the speculum and sound gave us additional information on minor points.

The diagnosis of polypus being once made, I think we should almost invariably attempt its removal as soon as practicable.

A patient with polypus uteri is at any time liable to hæmorrhage, which may prove fatal. The danger from this source is as great and as imminent from a small as from a large polypus; perhaps even more so. Prof. Simpson, in his "Obstetrical Memoirs," reports the case of a lady aged fifty-five, unmarried, as follows: "She had been long suffering under severe menorrhagia. The face was pale and anæmic, and her health and strength broken down. On examination per vaginam, the os uteri was found closed; and Dr. Wood believing, with me, that the hæmorrhagic drain might be the result of an intra-uterine polypus, the mechanical dilatation of the uterine cavity was advised, but given up in consequence of local treatment being objected to. In a few weeks she sank from continued hæmorrhage. On opening the body, Dr. Wood and I found the lower part of the cavity of the uterus distended by a polypus of the size of a small plum, and attached to the back wall of the uterus by a narrow, half-broken stalk." On this Dr. Simpson remarks: "It was evident that if the cavity of the os and cervix could have been artificially dilated during life, the polypus would have come within reach, and the patient's life been saved."

In addition to the risk of death directly from hæmorrhage, there are more instances where the patient, weakened and enfeebled by this steady drain on the system, succumbs rapidly to acute diseases, as pneumonia or dysentery, which otherwise would not have proved fatal; or they fall victims to tubercular disease, induced by their enfeebled state.

Polypus in most instances prevents conception; but occasionally, if the polypus be small, pregnancy occurs. In such cases, the risk of the patient is considerable. They may die of hæmorrhage in the early months, if the polypus grow from the cervix, and is contained in the vagina, as in this instance where I show the preparation. If situated at the fundus, they may cause miscarriage; or, after parturition, they may so interfere with uterine contraction as to cause death by hæmorrhage.

Churchill cites a case which occurred in his own practice, where death resulted from post-partum hæmorrhage; and on dissection, a large cellular polypus was discovered at the fundus uteri.

They may, besides, seriously impede labor by their bulk in the vagina, and by their interfering with the expansion of the os, and occasionally require instant removal before the labor will proceed.

Occasionally, but very rarely, polypi fall off spontaneously. Dupuytren relates one such case, where, at one examination, a small polypus was discovered, and he determined to remove it. Four days afterwards the polypus had gone.

The preceding evening the woman had passed from the vagina a small black, elongated body, which she took to be a coagulum. Dupuytren thought the vitality of the polypus had been affected by the examination; from his description, it seems to have been of the cellular variety.

An intra-uterine polypus may partly protrude through the os, and at a subsequent period completely withdraw into the uterine cavity. In the case I have read, the polypus protruded on the 10th of November a quarter of an inch or more through the os; on the 20th it had receded completely, but the os was still dilated.

Dr. Simpson relates a case where Dr. Beilby made an examination, "and found a polypus of the size of an almond projecting from the lips of the os uteri. On Dr. Beilby returning, two or three days subsequently, to put a ligature around the neck of the polypus, none could be found, and the os uteri was shut. The other symptoms, however, did not change, and on the recurrence of a new hæmorrhage Dr. Beilby made another examination, again found the polypus protruding, ligatured and removed it."

If a polypus remain long without being removed, the mucous membrane covering it is apt to ulcerate, and it may become adherent to the walls or cervix of the uterus, very much embarrassing the operator who attempts its removal, and certainly adding greatly to the risks of the unfortunate patient.

Mr. Baker Brown, of London, relates a case where the polypus was the size of a small apple. On proceeding to apply a ligature for its removal, he found it adhered very firmly to os and cervix. "He dissected the os and cervix carefully back, separating their very firm adhesions, which extended upwards of two inches. He then found the bands of adhesion becoming fewer, and easily broken down by the fingers. The polypus could now be distinctly felt growing from the fundus of the uterus." She died five weeks after the operation, from softening tubercle in the lungs.

I think there is great danger, where such adhesions exist, of metritis and pyæmia.

The removal of a polypus may be attempted in three ways: 1. By torsion. 2. By excision; and 3. By ligature.

Torsion affords the quickest and easiest method when it is applicable; but unfortunately many polypi grow with such a broad base, especially those from the cervix, which often involve one entire lip, that torsion will not remove them. By torsion carefully used, we can remove all mucous and cellular polypi and all fibrous polypi that have a narrow pedicle, especially if it be short. There is no chance of hæmorrhage; for the individual vessels which enter a polypus are small, though in the aggregate they may convey a good deal of blood, and by the torsion used these are completely sealed up. Mr. Toogood, of the Bridgewater Infirmary, first advocated this practice; and in a suitable case, it possesses the advantage of being easily and quickly performed, safe, and at the same time certain in its results.

Excision, for which a variety of instruments have been invented and used, is rapid in its performance, and makes sure work of the polypus. Many object to it, for fear of subsequent hæmorrhage. Dupuytren excised over two hundred polypi, and had only a trifling hæmorrhage in two cases.

Prof. Simpson has lately used this mode exclusively, and I am not aware of any unpleasant hæmorrhage resulting.

The *écraseur* is also a favorite with some, to prevent hæmorrhage;

but we see this is not likely to happen under any circumstances. When the pedicle grows from the fundus, it may be rather difficult to use a cutting instrument safely, removing the whole of the polypus, and yet not injuring the uterine walls.

We come lastly to the ligature, a means applicable to all cases, yet with certain very grave objections attached to it. It is the oldest of all the methods, and was invented when the pathology of polypi was very vague and crude in comparison to what it now is.

When the pedicle is large and seems very vascular, more especially if it involve the greater part of one lip of the os or cervix, the ligature is, I think, preferable.

But its disadvantages are considerable; it requires time to separate the polypus, varying according to the thickness and vitality of the tumor. The fœtor arising from the putrid mass in the vagina is very offensive and disagreeable to the patient. There is, besides, danger of absorption of this gangrenous ichor, and the system often exhibits febrile reaction to a considerable degree. Dr. Tyler Smith has observed that an eruption of boils often takes place after the use of the ligature in such cases, showing that some poisonous material has been absorbed. Moreover, as the ligature is generally applied by means of a canula, the recumbent posture is almost necessarily enjoined for many days.

Mr. B. Brown applies a ligature and then cuts off the polypus anterior to the ligature, in this way escaping the evil effects of putrid absorption to a great extent.

Another method proposed is to twist the pedicle on itself, and so cut off the circulation through the polypus, and leave it to slough. But it would be better to twist it off at once, and leave no dead tissue in the vagina.

The danger of bleeding is a bugbear more than the reality; even when cut off smoothly, it is very rare for any to occur, and I know of no fatal case of hæmorrhage from excision of a polypus.

When the polypus has been removed, the question arises, Is the patient cured? This may be easily answered in the affirmative when the polypus is *mucous* or *cellular*. If it be *fibrous*, the question is not so simple; that the patient is cured of the polypus that has been taken away is certain, but another may at a subsequent period grow.

The development of fibroid growths in the uterine walls may result in a fibrous tumor or in a polypus, according to circumstances influencing its development in particular directions or shape.

When one of these growths exists, on dissection we generally find the germs of others, and they may undergo successive development. If one be removed by operation, its place may be taken, as it were, by another.

Yet I think, in the case of uterine polypi, where one is fully removed, it is seldom another requires subsequent removal.

But if we do meet with a second polypus, we are certain it grows from a different root or germ.

There are many interesting points in connection with polypi upon which I have not touched, especially the source of hæmorrhage, and other interesting questions in their pathology. My object has been to excite discussion on its practical bearings, and to direct attention to the facility with which many polypi can be removed by torsion.

In conclusion, I would urge their early removal in all cases except where contra-indicated by coexisting pregnancy.

When they are intra-uterine, and the os not dilated, it should be dilated by sponge-tents or other means, and the polypus removed; for if we trust to natural efforts to open the os sufficiently to permit its removal, the patient may succumb to repeated hæmorrhage, of which there are numerous recorded instances.

Moreover, when in any case we meet repeated hæmorrhages, not plainly referable to some well-ascertained source, we should dilate the os and cervix uteri, to permit a thorough search for an intra-uterine polypus.

QUARTERLY REPORTS ON MEDICAL PROGRESS.

REPORT ON PHYSIOLOGY.

Concerning a singular Hallucination of the Sense of Touch (or Subjective Heterotopy of the Extremities) peculiar to certain Amputated Persons. By M. Gueniot.

There is no physiologist who does not admit, at the present day, that the different sensations determined by the irritation of a sensitive nervous trunk may be specially, and often even exclusively, referred to the final ramifications of that nerve. Thus are explained the pain and swelling of the foot, in cases of compression of the sciatic trunk; the itching, pricking pains in the hand, when the irritation affects the nerves of the brachial plexus. It is also by virtue of this same law that we explain how it is that the seat of pain, in pleurisy, habitually appears to be in the anterior portion of the chest, even when the irritation of the nerve takes place at a point very near to the vertebral column. But under no circumstances, perhaps, is this fact more remarkable, or of such constant occurrence, as subsequent to the amputation of limbs. We then hear patients complain, most frequently, of excessive pain in the amputated extremity, while they barely perceive a slight smarting sensation in the wound itself—that is, at the point of section of the nervous trunks. Several cases which we report further on, are in this respect most clearly defined. Moreover, in the case of persons who have suffered amputation, the persistence of pain in the parts cut off is a fact so common and so frequently observed, that for a long time it has been noted and mentioned by authors. A. Paré calls attention to this curious phenomenon in a striking manner. "Patients," he says, "a long time after amputation has been performed, say that they still feel pain in the dead and amputated parts, and bitterly complain of it; a thing worthy of wonder, indeed, and almost incredible by people who have no experience of such matters." And further on, referring to the same fact, he attempts an explanation of it. "It is thus that, a long time after amputation, patients think that they still have in all its entirety the limb which has been amputated, as I have said; which so appears to them, as it seems to me, *because the nerves are withdrawn towards their origin*."*

But there is another phenomenon of somewhat frequent occurrence, and which, though much less known, (for nowhere, so far as I know, has any mention been made of it,) may yet interest, in some measure, the physiologist and clinicist. I refer to the sensation of *shortening*, and of *progressive withdrawal*, experienced by the patient in the amputated parts; a sensation which produces in him the illusion of the gradual approximation of the *hand* or *foot* to the point of amputation. Ordinarily, this sensation of progressive shortening has no limit except that of contact of the extremity (hand or foot) with the stump of the amputated limb. This last sensation continues a longer or shorter period of time, until all feeling of the amputated part has disappeared. It is to this very phenomenon, to this deceptive sensation of approximation of the amputated part, that the denomination of *subjective heterotopy* seems to me to be properly applicable.†

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* *Œuvres Complètes d' A. Paré*, édit. Malgaigne, t. II., p. 221–231.

† *Heterotopy*, from ετερος, *other*, and τοπος, *place;* a word already employed by M. Lebert to designate a law of general pathology. The epithet

The patient in whom I observed, for the first time, this curious phenomenon of sensibility, was a young woman of twenty-seven years of age, a seamstress, regular in her menstrual periods, of sanguineous temperament, and apparently in the enjoyment of excellent general health. She had come to Paris to be treated there for an enormous fibrous tumor which was located in the upper and external portion of the left arm. This tumor penetrated deeply into the soft portions of that part of the body, and seemed, by reason of its slight mobility, to be adherent to the bone. Its commencement dated back five years, and from that time, with the exception of occasional periods of stationary condition, it had constantly grown, without having been in any manner affected in its development by a successful pregnancy which had taken place about three years before. The patient for two years had experienced, in the shoulder and the upper part of the arm, very distressing darting pains, *(like the pricking of a needle,)* and in the hand almost unendurable pricking pains, which she was accustomed to lessen by squeezing this hand with the well hand. The movements of the arm were very limited; the patient could no longer either dress her hair, nor even carry her hand to her mouth. There were a few rather large ganglions in the armpit. Her general health, as we have said, nevertheless, continued excellent.

After several very attentive examinations of the tumor, my learned and beloved master, M. Voillemier, in whose service the patient had entered, determined to perform the operation of disarticulation of the limb. The operation was performed on the 24th of September, 1858, with the aid of chloroform, and presented no features worthy of special mention. The loss of blood did not exceed the ordinary proportion. But—remarkable thing—the patient, from that time, could not urinate voluntarily, but was obliged to make use of the sound three times a day. This retention seemed to me to be the result of a spasmodic condition of the neck of the bladder; for at the very moment of catheterism, when the sound was once introduced, the bladder contracted sufficiently to expel of itself almost all of its contents. It was not until the 6th of October—that is to say, twelve days after the operation—that the patient was able for the first time to urinate voluntarily. There was no special medication employed against this accident.

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subjective, which is added, indicates in this place that it is only a question of a *sensation* of displacement, or approximation of the amputated part, and not of a real displacement of the organs, (or *objective* heterotopy.)

During the two days succeeding the operation, the patient remained in a state of great weakness; her countenance was very much congested; her pulse slight, and very frequent—at 120. Her voice changed in tone and in pitch; it became sharp, very weak, and very high, like a falsetto voice; and these modifications continued for more than eight days. A very painful burning sensation was felt in the hand of the amputated side, and the least shocks, or even the slightest touch of the stump, aggravated this pain in the highest degree, whilst the smarting of the wound was barely perceived.

On the 27th of September, the dressing of the wound was for the first time entirely renewed. New flesh had begun to form, and the patient continued to complain very much of her hand. Her general health became better—falsetto voice as at first.

On the 1st of October the wound was in very good condition. We took away the last points of suture; a part of the shreds had reunited. Pain in the hand constant and severe. Return of strength; falsetto voice; retention of urine; constipation.

During the following days up to the 9th of October, progressive and rapid amelioration in the general health of the patient. On the other hand, the wound, in perfect apparent condition, was in a fair way of cicatrization. But fever reappeared on the 9th, and continued until the 18th, accompanied by a condition of decided sinking. The cause of these accidents was a small abscess developed in the subclavicular region, and which was punctured at a point near to the wound.

Subsequent to this temporary complication, cure was not particularly obstructed in its progress, and the patient, who, in the early days of November, had recovered her strength in a great measure, was able to rise from that time without danger. The wound, however, had, up to December, a fistulous canal, by which, at different epochs, certain ligamentous *débris* were discharged. The patient left the hospital entirely cured.

It was only towards the end of the month of November, when the patient was nearly cured, that I perceived, or rather, that the patient herself revealed to me, to my great interest, the singular sensation of which the amputated limb was the seat. She informed me that for about ten days her hand, *all of whose parts she still very clearly perceived*, instead of being, as during the first days after the operation, at its normal distance from the shoulder, seemed to be, on the contrary, actually in contact with the stump. From that time I set myself to study, in all its details, this curious phenomenon. I thus learned that it was not in any sudden manner that the hand had in some sort come to be united to the shoulder, but only progressively, and by a slowly perfected movement of gradual ascent. The hand was still the seat of itching, pricking pains; but these latter, instead of being, as before, constantly painful, only became troublesome during periods of atmospheric variation, and when the stump received a shock or noteworthy jar. The parts lying between the stump and the hand were now only very indistinctly perceived. However, these same parts—that is to say, the arm and forearm—were at times also the seat of certain pricking pains, and seemed to be strongly fastened against the trunk, in a condition of forced flexion of the forearm. Let me add, that the hand appeared then, so to speak, independent of the forearm, and was rather perceived as a direct continuation of the stump.

This ascensional movement of the hand began during the first week subsequent to the operation. I could not in this respect obtain the date more definitely, for this phenomenon had at first but slightly attracted the attention of the patient. It was only at the time of its greatest accentuation, and by reason of the pain still existing at certain times in the hand, that the patient spoke to me of this singular illusion, while giving me an account, one day, of her condition. From this time, however, I was able for several weeks to continue this interesting study. And I could do this so much the more readily, because the patient was a very sincere and intelligent person, and able to analyze her sensations perfectly. When she left the hospital, she was still affected by this hallucination.

Since this case, which dates back about three years, I have noticed the same phenomenon a number of times. In order to define in a more complete manner its different characteristics, I will add to the preceding case certain other facts which are not less explicit.

In the case of a very intelligent young man, sixteen years of age, whose arm was amputated for a white tumor of the elbow, and whom my friend and colleague, Soulier, very kindly showed me, under the charge of M. Michon, the wound appeared in good condition, and progressed regularly towards cicatrization. The operation had been performed about twelve days previously, and the sensation of the gradual approach of the hand towards the stump was so clearly defined, that the patient was able to note, so to speak, inch by inch, the ascensional movement of the part. The illusion was carried to such a pitch, that at times it gave rise to the following mistake: the patient, who continued to feel perfectly the hand of the amputated limb, wishing, in a moment of inattention, or while half asleep, to take hold of it, in order to move it, carried his other hand *to a short distance from the stump; that is to say, to the very point where he thought he would meet the first hand.* The normal distance which should separate the hand from the point of amputation was at that time shortened by about 15 centimetres. Later, this illusion of gradual approach having continued, the hand, which was still clearly perceived, at last seemed to be fastened to the stump, whilst for a long time the intermediate parts had ceased to be felt. It is remarkable that, in the case of this young man, the operation was not followed by any special fever, nor by any other general symptoms, and that cicatrization was not obstructed by any complication whatever.

Another patient, twenty-four years of age, a teacher, of lymphatic temperament, whom I saw in the service of M. Richet, at the Hospital Saint Louis, had, on the 25th of June last, submitted to amputation of the thigh, for a white tumor of the knee. This patient, before the operation, suffered greatly from his knee, and became more and more emaciated from day to day. His leg was in a certain degree of flexion upon the thigh. Amputation having been performed, all the parts cut off promptly ceased to be perceived, with the exception of the foot, which for the first time became the seat of violent pains. The knee, on the contrary, was no longer perceived, and the wound barely caused a slight smarting. The severe darting pains felt in the foot continued during the entire month succeeding the operation. The sentiment of this part was so well preserved, that the patient often carried his other foot, or stretched out his hand, towards the point where he felt the pain, with the idea of mitigating it, by moving or rubbing the organ. The wound, in the mean while, progressed in such a satisfactory manner, that three weeks after the operation, the patient was able to get up. But a fall which he got at that time retarded his cure, which nevertheless was complete on the 25th of August. In fine, when I saw him, at that date, for the second time, his general health had greatly improved, and the stump was almost completely cicatrized. The different parts of the foot were now perceived only separately; that is to say, the sole, the heel, the toes, etc., but especially the big toe and the heel, which previously had been the seat of severe pains, were now only perceived successively, and when the disagreeable pricking pains again made themselves felt. The foot no longer seemed to be whole, or rather, all its parts made their appearance only in an isolated and successive manner. But the patient constantly perceived one region, either the heel, or the toes, &c., and the region perceived changed very frequently, almost every five minutes. Thus it happened that, while I was questioning the patient, or rather, during the voluntary recital which he made to me, of his sensations, he felt the pain in his heel, then in his great-toe, then in his heel again. From the time of amputation, the pains never passed beyond the limits of the foot; the patient barely perceived, sometimes, at first, slight darting pains about the region of the ankle bones. The foot, although isolated, so to speak, from the rest of the body by the loss of sentiment of all the other amputated parts, however, never appeared to be completely separated from the body. This organ, in fact, according to the very expressions of the patient, seems to be still attached to the thigh, *by something impossible to be defined—a sort of string, a stick*—a vague medium, in which he was unable to distinguish any part whatever.

Finally, a circumstance of special importance in respect to the question we are considering, *the foot for about fifteen days seems to the patient to be less distant from the body than it was before the operation.* This approach to the body is, however, as yet quite inconsiderable, and may be estimated at 10 centimetres. The patient reaches this conclusion in the following manner: he remembers, first, that his leg being, before the operation, slightly bent, the foot was consequently a little higher up than that of the well side. Then, during the six weeks immediately after the operation, the amputated foot was perceived at the same point as before; that is to say, at such a distance from his body that he could not reach it with his hands, when he directed them towards it for the purpose of rubbing the organ. At the present time, on the contrary, besides the necessity of carrying his well foot higher up than before to reach the amputated foot, he can also with his hand come in contact with, or rather reach, the point where the pricking pains make themselves felt in his foot.

I crave indulgence for having reported in such a minute manner the description of the sensations experienced by this patient. The fact of the approach of the amputated extremities near to the wound of amputation—a fact on which I desire particularly to insist—not being an isolated sensation, nor entirely disconnected with all others, it has seemed to me very proper, if not, indeed, necessary, to set forth in detail the accompanying phenomena. It is, in my opinion, the best method of considering the circumstances under which this curious hallucination of the sense of touch is produced, and of forming a just appreciation of its characteristics. Now, however, I will limit myself to one single fact more.

A man, about thirty-five years old, who had submitted to submalleolar amputation of the leg, some eight or ten days after the operation, in like manner felt his foot by degrees drawing near to the wound, and the interval which primarily separated them gradually becoming less and less. But in this case the phenomenon was complex, and the illusion double; for, in addition to the preceding sensation, there was also another, even more distinctly defined, by virtue of which the foot seemed to have undergone a sort of contraction—a belittleing of all its parts, which reduced its dimensions to that of a *child's foot*—such were the very words of the patient. We will not dwell upon this last and very singular illusion, another hallucination of the sense of touch which we believe to be much more rare than that we are considering.

The preceding facts are sufficient, I think, to show us wherein consists, in the case of certain amputated persons, the hallucination which we propose to call *subjective heterotopy of the extremities.* In order to complete the study of the subject, we have only to endeavor to give, so far as we possibly can, the solution of the problems which appertain to it. Numerous questions, indeed, arise in the mind. Is this hallucination on the part of amputated persons a constant phenomenon, or simply accidental? And, in the latter case, what is the degree of frequency? At what period does it begin? What are the circumstances which favor or obstruct its manifestations? What are its causes, its duration, its signification, &c.?

We can say at once, and almost with certainty, that the phenomenon is not constant, for we have met with individuals who, several weeks after their complete cure, had given no evidences of it. Such is, for example, the case of a young girl, whose leg was amputated on the 13th of July last, and who told us on the 2d September, a month after she was completely cured, that she still felt in the most perfect manner all the amputated parts, and that, too, very distinctly in their volume, their *distance*, and all their normal relations. Such is also the case of another amputated person, who had lost all consciousness of the amputated parts without ever having been affected by subjective heterotopy. But in respect to the degree of frequency, before indicating the results of our observation, we have an important remark to make. It is, that in the research for and examination of the phenomenon which we are considering, we quite often meet with difficulties, and even with impossibilities, which we must not disregard. Very many patients are amputated too near the extremity of the limb; others are not sufficiently intelligent; others, again, are in a condition of too great weakness for us to be able to obtain any precise information from them. All cases of this sort should of course be carefully put aside. We will consider, on the contrary, especially those individuals who have suffered amputation at a point sufficiently distant from the hand or the foot, and the condition of whose general health and the degree of whose intelligence permit them to make a correct analysis of their sensations. It is, moreover, useless to add, that in all cases we must be on our guard against a lack of sincerity in the patients. Now, among the individuals who have satisfactorily filled these various conditions, we have found five out of ten who were affected by subjective heterotopy of the extremities. This phenomenon, consequently, must be quite common, since it is found in the proportion of one out of two. But we would not positively affirm that this is the exact and invariable degree of its frequency, for the number of our observations is as yet too limited to settle this question in a very positive manner. However, we would also remark, that in making this estimate we have not included in our reckoning a phenomenon extremely common among amputated persons, and which, although entirely distinct from subjective heterotopy, nevertheless has indisputable relations with this hallucination; we refer to a sensation of flexion, at times excessive and very painful, of the different sections of the amputated limb.* The result of this sensation of flexion being to approximate the extremity more or less towards the root, one might, in the first instance, confound this phenomenon with the foregoing. But, if we consider that in the case of hallucination relative to the perception of distances, the hand and the foot seem to be less a continuation of the tissues of the forearm and of the leg than of the stump, while, in simple flexion, the sensation of the normal relations is preserved, we shall readily comprehend that in these two cases we really have to do with two distinct phenomena. We have seen, moreover, that in the case of our first patient, cited above, there was a sensation of forced flexion of the forearm upon the arm, which did not prevent us, however, from citing the case as an instance of subjective heterotopy. But it must be remarked, that in this case the arm and forearm were only very feebly perceived, and the hand no longer seemed to be,

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*I saw recently, in the service of M. Nélaton, a patient who had suffered submalleolar amputation of the leg, and who told me that during five or six days succeeding the operation he had felt excessive pain in the amputated foot. Then he hastened to add, that this pain was particularly located in the toes, which seemed to him to be in a *state of such aggravated flexion* that the suffering resulting from it was positively unendurable.

so to speak, the continuation of them. Still, I am quite inclined to think that it may at times happen that the sensation of contact of the hand with the stump is produced primarily by this mechanism; that is to say, by the flexion of the inferior sections of the member. The phenomenon of subjective heterotopy would in such cases only be distinctly characterized from the time when the intermediate parts ceased to be perceived in such manner that the hand seemed to form the continuation of them. Notwithstanding this, however, we must none the less consider the subjective sensation of flexion of the extremities as entirely distinct from that of their occasional movement and approximation towards the stump.

In respect to the beginning of the hallucination, and also as to the epoch of its disappearance, we have not as yet been able to reach any definite conclusion. Its duration, consequently, remains entirely unknown. And yet, according to some of our cases, we think that the phenomenon, while at the same time presenting in this respect numerous variations, may begin as early as the first week after the operation and disappear one or several months after complete cure, or even at a still later period. It is to be noted, moreover, that certain circumstances seem to have a powerful influence upon the production and intensity of the phenomenon. It is thus that the sensation of approximation appears to be, when it exists, much more clearly, and, so to speak, more imperiously perceived by the patient when the wound is in a good condition and is progressing regularly towards cicatrization. We might here recall certain peculiarities which we have mentioned in our cases. These, in effect, testify, for the most part, in favor of this opinion. On the other hand, a bad state of general health and a wound of unsatisfactory appearance are unfavorable conditions, and, indeed, almost incompatible with the well-defined existence of the phenomenon. Therefore, in a clinical point of view, we might say that subjective heterotopy is an excellent indication of the good condition of the wound, and even, it seems to me, a favorable prognostic of complete cure. We shall see, further on, that this fact, which at first seems rather extraordinary, can be explained in a very satisfactory manner.

If, now, we endeavor to give a reason for the hallucination of the sentiment of the reciprocal distances of our organs,* we would remark, in the first place, that singular as this phenomenon is, we can find some reasons for its existence, which render the comprehension of it less obscure. Every one knows that in the exercise of the sense of sight it is necessary, in order to appreciate the distance of objects, that intermediate bodies should exist between those objects and the

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* If we are charged with making an improper use in this place of the word *sentiment*, we will confess our fault at once. But, by way of excuse, we would remark that this expression, perhaps better than any other, renders comprehensible the idea which we wish to express. Now, it is well known that it is not

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always very easy to be clear and readily understood in the description of sensations, and, for still stronger reasons, in that of hallucinations. Besides, we would add, that if in reality we feel (*sentons*) neither the distances nor the reciprocal relations of our organs of life by comparison, these *notions* being the result of an *operation of the mind*, it is none the less true that these same notions are to such a degree *elementary* and *primitive*, that in our appreciation of certain qualities of bodies we make use of it instinctively, so to speak, as a new sense, or, better still, as an indispensable complement to the action of the sense of touch. However slight our reflection on this subject, we shall see, in effect, that it is to these primitive notions that we owe the possibility of perceiving by the simple touch, and without the aid of the sight, the *form* and the *direction* of bodies, the *direction of their movements*, etc. To render more striking the truth of these assertions, let us consider certain particular facts taken at random.

And in the first place, in respect to the notion of form, when we place in our hand any object whatever, a nut, for example, and we shut our hand, why do we immediately recognize, by the mere sense of touch, that this nut presents a spherical form? Because the joints of our fingers being bent, and the palm of the hand more or less hollowed out, these different parts have thus modified their relations in order to mould themselves about the nut, and because afterwards we perceive very clearly this *modification*. Now, in this case, if the spherical form of the nut is known to us, it is simply because of our consciousness (that is, our primitive notion) that the parts of our hand are modified in their relations in such manner as to circumscribe themselves a spherical space, so that the form perceived is at first that of the space circumscribed by the hand, and afterwards, only, we apply this notion to the body submitted to our examination. If, then, we were deprived *of the faculty of perceiving the relations (or the notion of the relations)* which the different parts of our hand bear to one another, and, consequently, every modification of these relations, it is evident that the appreciation of *the form* of the body would be completely impossible for us without the aid of our sight. The notion of the reciprocal relations of our organs is, therefore, in this case, a necessary adjuvant to the action of the sense of touch. It would be easy for me to demonstrate that the case is the same in respect to the perception of the direction of bodies, as well as in respect to that of the direction of their movements. But I will confine myself to showing, by an example, the equal importance of the *notion of reciprocal distances* of our organs in the efficacious execution of our own movements, when these are accomplished without the aid or control of the sense of sight. Suppose that by some sort of deviation of the sentiment of distances, or better still, by an hallucination which disturbed the correctness of that notion, our feet should seem to us to be nearer our knees than they are in reality, is it not evident that we could not walk in the dark without hitting the ground forcibly at every step, just as it happens to observer. It is, in fact, upon this law of optics, that rests, in great measure, the art of perspective. If it is impossible for us, indeed, to appreciate readily the distance which separates us, for example, from a ship on the open sea, or from a tree which we perceive far away, isolated in the plain, it is because our mind, in these cases, is deprived of the ordinary resource which is furnished to it by the sight of intermediate objects. It is then unable to judge of the distance of those objects, by combining, as it is wont to do, the different intervals which separate the bodies scattered between the observer and the object observed. Now, if we consider by itself the elementary notion of the reciprocal distance of our organs, a notion which is acquired in the earliest period of life, we shall see that without the aid of sight, we do in reality perceive each part of our cutaneous surface, and each one of the sections of our limbs, etc., in their respective positions, and in their reciprocal approximation or separation. But if this is so, we must readily admit that it is by reason of the preservation of sentiment in the parts intermediate to the two points, or the two organs under consideration, that we can appreciate the distance which separates these same two points or these same two organs. So that our mind judges of the distances which separate different portions of our bodies, by an instinctive operation, analogous to that which it performs in the appreciation by the eye of distant objects; that is to say, by adding together, so to speak, the elementary distances which separate each one of the intermediate points or objects. Now, if we suppose that in the exercise of the sense of touch we should be deprived of the sentiment of certain parts of the body—of the arm and forearm, for example—we would experience, in respect to the appreciation of the distance from the hand to the shoulder, the very same difficulty we meet with in respect to the appreciation by the eye of the distance of far-away objects, when these latter are completely isolated. This is, in fact, what is observed in cases of subjective heterotopy of the ex-

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us under ordinary conditions when the ground rises suddenly and unexpectedly before our feet? But if this hallucination should cause us to perceive, on the contrary, an exaggerated increase of the distance of our feet from our knees, our gait would assume an entirely different character, though none the less defective. It might be compared in that case to the gait of a blind man, whose every step resembles a fall, when he happens to meet in his path with an unexpected declivity. And yet, again, in these cases, let us suppose that the hallucination is not carried to a very high degree, for, under this latter hypothesis, progression would not be merely defective, but completely impossible, without the aid of vision.

tremities. It results, therefore, from the comparison which we have just established between the exercise of the senses of sight and touch, in reference to the appreciation of distances, that the hallucination which we are considering may be explained, up to a certain point, by the loss of sentiment of the parts which normally separate the extremities from the point corresponding to that of amputation.

Now, to what division of the general sense of touch ought we to refer the trouble which determines the illusion of the approximation of the peripheric parts? Is it to the secondary sense of *contact*, or to that of *muscular activity*, if, indeed, we may consider this latter as a distinct and irreducible sense? We present this question, because it seems to us to be interesting to know which is the sense specially affected in the case of subjective heterotopy. But we frankly confess that the answer seems to us very difficult. In fact, we have said above, that in the production of this phenomenon, we are inclined to think that, at times, the sensation of flexion of the limbs plays an important part. Now, this latter sensation seems to be dependent upon the sensation of muscular activity. But we must not forget that in the normal condition, in addition to the notion of the real separation of the extremities of our limbs, we have also that of the respective distance of the smallest portions of our cutaneous surface. And in this last-named case, it seems to us that it would be very difficult to call in to our aid the sense of muscular activity. It results, therefore, from this fact, that deeming it impossible to attach this notion of distances to the action of a single secondary sense, we have thought it more rational to consider it, for the present, at least, as resulting from the action of the general sense of touch. For this reason, it has seemed to us preferable to continue to apply to this illusion of the approximation of the extremities the name of hallucination of the *touch*, rather than to give to it that of hallucination of the sense of muscular activity, which seems to us to have a too limited significance.*

As to the word *hallucination*, we have also asked ourselves if it was a suitable designation for the phenomenon. It is certain that in the present case, the propriety of its use may be disputed. Is subjective heterotopy, in fact, an hallucination; that is to say, a sensation awakened irrespective of every external or organic exciting cause? On the one hand, we know that, in the case of certain patients, shocks of the stump arouse or render clearer the perception of the amputated extremities. And, on the other hand, is it not especially probable that the persistence of the sensation in the amputated limb may be attributed, in great part, to the organic modifications which take place in the nerves of the stump? May we not believe that the work of cicatrization, and the superficial abnormal situation of the nervous extremities, may contribute powerfully to the production of the phenomenon? The probability even that the cicatrizing elements play an active part in the manifestation of this hallucination, explains, up to a certain point, the fact to which we just now called attention, namely, that in the case of persons whose wound was in a good condition, and consequently the seat of an active work of cicatrization, the sensations perceived in the amputated limb were so much the more distinctly and clearly defined. If, then, we consider the organic excitement produced in the nervous trunks by the work of cicatrization as an external and objective excitement, it is evident that the phenomenon will no longer stand in the rank of hallucinations.

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* Hallucination of the *touch*—such is the denomination which we made use of in a paper that we had the honor to read lately before the Society of Biology. After a very kind consideration of the matter on the part of M. Brown-Séquard, we had at first substituted for this appellation that of hallucination of the sense of *muscular activity*. But after reflection, and for reasons which we have just explained, we have thought proper to return to our original denomination.

But if we take into consideration, that the preceding reasoning rests only upon probabilities, and not upon established facts; and, on the other hand, that we have been unable to find any other word whatever capable of better expressing the principal characteristic of the phenomenon, than the word hallucination, it will be perceived that we have not employed without reason this denomination, at least provisionally.

In conclusion, the preceding facts and considerations may be summed up as follows:

1. That the subjective sensations experienced by amputated persons, in the amputated parts, are almost always more clearly defined, and more persistent in the terminal section of the limb, (the hand or foot,) than in the other parts.

2. That among these sensations, there is a very remarkable one, which produces in the mind of the patient the illusion of the progressive approximation of the amputated extremity towards the stump, with which its tendency is to come in contact.

3. That this phenomenon, this hallucination, which may be designated by the name of *subjective heterotopy*, is met with in about the

proportion of one out of two in the case of persons whose wound of amputation cicatrizes regularly.

4. That this illusion may, up to a certain point, be explained by the loss of sentiment of the parts lying between the stump and the terminal section of the limb.

5. That in a clinical point of view, the well-marked existence of the phenomenon is generally an index of the actual good condition of the wound, and a favorable sign of a complete cure.

6. Finally, that the very existence of this hallucination causes us to understand the importance, in the normal condition, of the notion of the reciprocal distances of our organs by comparison, every time that we execute movements which are not under the control of the sight.

The Italian Campaign of 1859. *Medico-Chirurgical Letters from General Head-Quarters.* By Dr. A. BERTHERAND, Principal Medical Officer of the First Class, etc., etc. Translated for the AMERICAN MEDICAL MONTHLY.

LETTER IV.

Brescia: its Monuments, its Hospitals—Castelnedolo—Montechiaro—Solferino—The 24th and 25th of June at Castiglione.

TO PROFESSOR BOULIER:

My Dear Colleague—In promising myself, on the seventh day of a slow and monotonous ride, a little rest at Brescia, I had counted without considering two intractable enemies of the most resolute *dolce far niente*—curiosity, and habits of activity. From the balcony of the Casa Fè, where municipal hospitality has most comfortably ensconced me, I can see the majestic portal of San-Nazaro, and the bell-towers of ten churches, all vocal with resonant chimes. The *Guide-Book*—which, I grieve to say, I have had only too much time to study since leaving Milan—also lures me forth, so I am soon launched into the spacious and well-arranged streets of the ancient Lombard city, in quest of the old *Palazzo Communale*, the Tosi Gallery, the Museum, the ruins of the Temple of Vespasian, and the lonely chapel of Santa Maria de Miracoli, with its marble front so exquisitely relieved by the chisels of the Renaissance. Do not suppose, however, that I stop long here. My walk, combining pleasure with duty, has also for its object, to pass in review the permanent hospitals of the city, the branches which the Hospital Commission is busily engaged in adding to them, and lastly, the places where still more may be added, in view of the great events which seem to be drawing nearer and nearer. This, to tell the truth, constitutes the chief interest of my excursion, and the tourist must of necessity give place to the physician.

Like Genoa, Novara and Milan, Brescia possesses a civil hospital, San Domenico, containing 800 beds. San Gaëtano and San Lucca are two military hospitals, at present occupied by some sick Austrians, whom the precipitancy of their retreat had prevented them from removing, and by about 200 of Garibaldi's volunteer Chasseurs, surprised a few days since in a reconnoissance between Castelnedolo and Montechiaro. Independently of these three regular establishments, nine immense houses, old monasteries, or barracks, are undergoing at this moment, thanks to the intelligent action of the medical administration, the most surprising metamorphoses. In less than two days the abandoned halls of San-Giulia are furnished with bedsteads, cots, tables and cupboards. Bedding, chamber utensils, plates and dishes, blankets, linen, everything is in abundance, and yet everything in order. Magnificent furnaces stand in the lower halls, transformed into kitchens and cellars; to-morrow, if you desire it, they will make soup for you, and you shall lodge, nurse, feed, and heat seven hundred patients within its walls! The same prodigies are repeated at Santa Euphemia, San Angelo, San Christo, San Giuzeppe, the Casa Schiene, the Jesuits, and San Antonio!

Can you tell me the secret of this efficient activity? In brief, it is this: a single administrative body, small in numbers, fully competent, neither biased nor thwarted by intrusive outside control, and whose special functions have free play under the fruitful impulse of patriotism and professional duty.

Early on the morning of the 21st of June, the General Head-Quarters is transferred to Castelnedolo, a short distance behind Montechiaro, which place our divisions have almost reached. The cavalry of the Guard soon stops us, for we are nearing the banks of the Chiese. To-morrow, on its right bank, the army will pass over the battle-field, long familiar with the annual manœuvres and strategic studies of the Austrian Army. But our anticipations on this subject are destined to be again disappointed. On the 22d we occupy Montechiaro, a large town, which offers nothing more of interest than Castelnedolo.

We notice here, however, a small hospital, recently erected, and susceptible, with a little care and foresight, of fulfilling very satisfactorily the design of its pious founders. In these two last towns we shall have to make use of the churches to accommodate the wounded.

On the 24th, after a halt of forty hours, we proceed slowly in the direction of Castiglione. As we approach to the end of our march, clearer and sharper comes the noise of the cannonade, which has been grumbling in the distance since the break of day. There is most certainly fighting going on, *hard* fighting, and along the whole line in front of Castiglione. While the entire staff of the Guard, the cavalry, and the reserve of the artillery dash off on the run to the scene of combat, the ambulance corps of the General Head-Quarters dismounts, and prepares in all haste for the labors which are about to devolve upon it. After detaching from my own party a flying section, under the orders of Surgeon-Major Leroy, ready to place itself on the battle-field at the first signal, I take possession of the San Luigi barracks, a convent, and a neighboring church. This cluster of buildings promises me room for from eight to nine hundred wounded. Straw beds, and a few mattresses, the result of either voluntary offers or requisitions, are at once distributed through the rooms, the corridors of the barracks, the galleries of the cloister, and the nave of the church. A hall on the ground-floor will answer as laboratory; a second will serve as an operating-room. With this design, the caissons are emptied of their stores, apparatus, instruments, tables, medicines, etc. In the absence of our apothecaries, who have remained a little in the rear of Montechiaro to complete the embalming of the body of General de Cotte, who died last evening of apoplexy, I impress two Speziali of the city in order to assume a supply of tisans. Two Italian physicians, MM. Gallina and ———, offer us their assistance; gifts of linen and charpie are gladly received. Castiglione possesses a small civil hospital, containing thirty or more beds; I immediately turn out of them the sick and footsore French soldiers whom I find there, and their places are soon filled by wounded officers. I was just beginning to feel anxious at the numerical insufficiency of my assistants, for the Assistant Commissary, M. Lebreton, had carried off my flying ambulance, when a happy chance brought the principal medical officers, Leuret and Haspel, and Assistant-Majors Riolacci and Lobstein, who had lost their way in the excitement of a terrible battle close at hand. Our colleagues willingly consented to join us, and I arranged the service in the following manner: M. Haspel, with M. Roussel, the officer in charge of the ambulance, was to continue the search for new places wherein to deposit the slightly wounded, and to carry them by successive loads to Brescia. I had reserved for myself, with M. Leuret, at San Luigi, the examination and treatment of the more serious wounds, as well as the performance of operations. In order that my assistant-majors might, each in turn, derive instruction and experience from the surgical clinic which was about to be held, I separated them into two sections, which should, for spaces of two hours, alternate, between the dressing of wounds in the halls, and assistance, or even participation, in the operative manipulations.

From eleven o'clock in the morning, San Luigi and its branches were literally packed. MM. Haspel and Roussel had already, *nolens volens*, taken possession of the churches of Maggiore, San Giuseppe, the Capuchins, and Santa-Rosalia, and the Gendarme Barracks, where nearly 1,200 men were already stretched upon the straw. It was imperatively necessary that the more slightly wounded should be gotten out of the way after having their wounds dressed. A sort of compulsory *pass* system had to be adopted for those who were able to continue their journey to Montechiaro and Brescia. Despite all these precautions, the beds, or rather the available spaces on the bedding, filled up the moment they were left. All the private houses were carried by storm, and by evening the whole city was one vast hospital. This dispersion of the patients rendered our duties much more laborious, and we should have been unequal to the task, but for the fortunate return of our flying ambulance.

After mid-day the amputations succeeded each other without cessation, and it was impossible for me to leave for one instant—notwithstanding the reiterated appeals addressed to me on every side by a crowd of general officers, many of high grade, and for the most part my old companions in African expeditions—some of them calling up memories of an acquaintance and friendship begun on the passes of Atlas, or in Kabylia, under the tent of the ambulance. At last, at five o'clock, I was able to devote a few minutes to Generals Ladmiraut and Dieu, Colonels Servier, Pinard, Brincourt, Vallet, and Broutta, Commandants Pelletier and Lecable, and a dozen officers of various grades, whose wounds had received a first dressing at the civil hospital or in private houses.

Meanwhile, in consequence of the lateness of the hour, operations were becoming difficult, and as far as concerned probing for balls, extracting splinters, and applying the ligatures demanded by amputations and incisions, even dangerous. I therefore decided that until the following morning our entire time should be devoted to those who had not yet been visited, to the application of apparatus to fractured limbs which it had been judged best not to amputate, to the business of transferring the patients, etc. MM. Leuret and Lhonneur attended all night to this part of the hospital service, while I, with the rest of my party, undertook a circuit of the churches and private houses, which kept us on our feet till daylight.

At six o'clock the surgical operations again became the order of the day. Our situation has become much embarrassed during the night, by the arrival of trains of Austrian prisoners, great numbers of whom are wounded. By a piece of great good fortune, we have taken from the enemy an entire ambulance, including sixteen physicians, thirty-four nurses, stores and patients. We immediately set our captured brethren at work to dress the wounds of their countrymen; they performed the duty with skill and devotion, bestowing the same careful attentions upon Germans and French, indiscriminately mingled in this sad pell-mell of the day after a battle, at the ambulances. Not far from the San Luigi, at the end of an obscure court, fifteen or twenty Hungarian Hussars, pitilessly charged upon the night before by the Chasseurs d'Afrique, lay upon the straw under the shelter of an old shed. A soldier of our foreign legion, an old deserter from the same regiment, had constituted himself at once surgeon and nurse of this little ambulance. Most dexterously, I assure you, did he apply the amputating razor to these frightful gashes, stanching the blood and adjusting the flaps; and yet, himself wounded by a ball in the heel, he was painfully dragging after him his left foot, swathed in a bandage!

An incident of quite a different nature must be added to this series, long as it already is, of strange and unforeseen episodes. Towards two in the afternoon a great hubbub of horses and wagons, driven at full speed, confused shouts, and an excited crowd in the public streets, called us away from our serious occupations. Lamentable cries of "The Austrians, the Austrians! *Sauve qui peut!!!*" uttered in consequence of a most unaccountable hallucination, by some wretched wagoners, spread terror all the way from Carriana to Castiglione, and even in the wards of the hospital. In a few seconds the wildness of the panic was at its height; houses were closed, and the occupants rushed out into the fields, carrying whatever they deemed most precious. The least frightened barricaded themselves in their houses, and concealed their money and plate in cellars and pits. Such as had in the morning shown hospitality to French soldiers, quickly possessed themselves of a few Austrians in order to set themselves right with the dreaded victors of the evening. At last the panic attacked even the inmates of San Luigi, who, with their wounds half-dressed, and confined to their beds by fractures or by complicated pieces of apparatus, disembarrassed themselves as best they might of these impediments, and dragged themselves towards the doors, imploring means of transportation, and ready to fly with might and main, without knowing whither or how far.

We were obliged to place ourselves in the doorways of the wards to keep in these unfortunate men, whom abject terror had rendered deaf to all reason.

It was at this time that a few officers set off at a gallop in the direction of Montechiaro, and succeeded in turning back the fugitives. Unfortunately, the disastrous alarms had far outstripped them on the road to Brescia, and even reached Milan!

How deplorable, in the midst of such grave anxieties, was our isolation, and the entire absence of any military force to repress the disturbance and maintain the dignity of order!

This morning, the 26th, having intrusted the management of the hospitals at Castiglione to M. Haspel, we mounted our horses to report at the General Head-Quarters at Carriana. I could certainly have wished to continue for a few days longer a service so full of interest, as will soon appear from a report which I have prepared to-night, containing materials for the Surgeon-in-Chief, and which I will send you in a future letter. More than four thousand wounded received, placed in the hospitals or sent forward, fifteen hundred pieces of apparatus and dressings applied, forty-three operations performed—such must be for to-day, and in few words, the schedule of our two last days' work!

Do I need after this to justify the discursiveness of this letter, by pleading the irresistible need of rest, which compels me to close it thus abruptly? Yours affectionately, ☞

CARRIANA, *June 26th*, 1859.

REVIEWS AND BIBLIOGRAPHY.

A System of Surgery; Pathological, Diagnostic, Therapeutic and Operative. By SAMUEL D. GROSS, M.D., Professor of Surgery in the Jefferson Medical College of Philadelphia; Surgeon to the Philadelphia Hospital; Member of the Imperial Royal Medical Society of Vienna, etc., etc. Illustrated by 1,227 Engravings. Second Edition, much enlarged and carefully revised. In two volumes. Philadelphia: Blanchard & Lea. 1862. 8vo. Vol. I., pp. 1,062; Vol. II., pp. 1,134. (Concluded from Vol. XVII., p. 391.)*

Here we can select but a chapter or two for detailed review.

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*We apologize for allowing the conclusion of this review to be crowded out of our pages last month.—ED. MONTHLY.

"The Diseases and Injuries of Particular Organs, Textures and Regions," are treated of in 28 chapters, with two additional on "Special Excisions of the Bones and Joints," and "Special Amputations." The order in which the different subjects are taken up is systematic, and the discussion, in general, thorough and practical. Commencing with the diseases and injuries of the skin and cellulo adipose tissue, [the contagiousness of erysipelas being advocated, in the first section, on the basis of "considerable experience," p. 591, and as to treatment, the author stating that "the constitutional remedies, upon which our reliance is mainly to be placed, are blood-letting, emetics, purgatives, diaphoretics, mercurials, and anodynes." Fortunately, there is added, "blood-letting is not applicable in all cases of erysipelas; on the contrary, etc.," p. 596. "At the head of the list of local remedies may be placed leeching," which "may often be employed with great advantage, though, in general, it is, I think, entirely unnecessary. The fact that the operation is occasionally followed by erysipelas does not, in my judgment, prove that it may not at times be beneficial;" p. 599;] next come the affections of the muscles, tendons, bursæ and aponeuroses; then follow those of the lymphatic vessels and ganglions; of the nerves; the arteries; veins; capillaries; bones and their appendages; [with a capital section on fractures, in which, by-the-by, the author claims to be the first who called attention to extension and counter-extension by adhesive strips, having published an account of their excellent effect in 1830, in a Treatise on the Diseases of the Bones and Joints;] joints; [in the first edition, the chapter on the diseases and injuries of the joints preceded that on the diseases and injuries of the bones; the present arrangement is more natural and systematic. Although Davis' splint, for the mechanical treatment of coxalgia, is now described and highly spoken of, with the plain dictum added: "The apparatus of Dr. Davis has been variously modified by different surgeons; among others, by Drs. Sayre and Taylor, without, however, any essential change of principle;" on careful examination of this chapter it is still evident, indeed, almost as obvious as in the former edition, that the author has not made himself perfectly familiar either with this or other recent and most important improvements in the treatment of the injuries and diseases of the joints. The section on Dislocations of Particular Joints is a very full, excellent, and useful one;] head; [a chapter thoroughly revised since last edition;] spinal cord and column; face; eye; ear; frontal sinus; nose and its cavities; air-passages; neck; chest; jaws; teeth and gums; mouth and throat; (hernia;) anus and rectum; abdominal organs; urinary organs; male genital organs; female genital organs; and lastly, the diseases and injuries of the extremities.

There are many points in almost any of the chapters, of which we have merely indicated the subjects, that we might discuss at length for the purpose of substantiating and illustrating our previous remarks, both as to the merits and demerits of the work. We shall take up, however, only the two chapters on "Diseases and Injuries of the Eye," and "Diseases and Injuries of the Female Genital Organs." Both of these are in the second volume; the former occupying about a hundred pages, pp. 275–373; the latter eighty-six, pp. 896–982.

As an introduction to the former, Prof. Gross indulges in a short but rather violent tirade against other writers upon ophthalmic medicine and surgery. He charges them with "needlessly confusing, perplexing, and bothering the pupil, if not disgusting him with the study," by entering into too minute and tedious descriptions, and thus retarding the progress of ophthalmology, and with retaining in our literature the "barbarous nomenclature" of the Germans, "which savors too much of charlatanry." These he believes the principal reasons why medical men feel "a dislike, if not positive aversion, to the study of the maladies of the eye;" and why ophthalmic practice "is so often, both in this country and in Europe, in the hands of empirics." "It is deeply to be regretted that writers on the diseases of the eye cannot content themselves with a proper simplicity, and with what legitimately belongs to this department." Their "ponderous tomes" Dr. G. considers as superfluous as "the overgrown medical folios of our ancestors;" "all that is truly useful," he says, "might be comprised in a comparatively small compass;" "and," he continues, stripped of the "jargon of the pedant," and their "meretricious" character, works on the eye "would be read with the deepest interest." He then thinks to cap the climax, and asks, "Why should we designate an adhesion of the iris to the lens as synechia, a protrusion of the iris across the cornea as myocephalon, a cohesion of the lids as anchyloblepharon, and an operation for closing a lachrymal fistule as dacryocystosyringokatakleisis!" "Really," he triumphantly exclaims, "this is quackery in its worst guise."

Now, while there is just enough of truth in the "needless perplexing" and "barbarous nomenclature" to seem to justify the complaint when directed to *a few* of the "writers on the diseases of the eye," such a wholesale attack as that of the Professor (who, from his ability as well as his position, wields an incalculable influence over thousands of students and practitioners,) is altogether uncalled for; indeed, it is too rude and too unjust to allow our passing it by without severely reproving the author. As to "our German brethren," we owe to them beyond cavil, *par excellence*, the present advanced condition of ophthalmology; and even in the remotest manner to hint that such oculists as Von Graefe, Sichel, Arlt, Donders, etc., etc., etc., are quacks, or that their writings are "meretricious," is, mildly speaking, simply absurd, and surely we need not defend them from the charge. The objectionable habit—by no means indulged in by *oculists* exclusively—of employing words of learned length and thundering sound, where plain English ones will do just as well, no one can reprobate more than we do. The bit of satire by a recent journal in gravely describing a man who was fond of biting his nails, as "an individual who exhibited an onychophagistic propensity," etc., we have probably appreciated as keenly as anybody; yet we do not believe that such "barbarous nomenclature" could really ever prove an insurmountable "obstacle to him who wills" to learn: though it would make the acquisition of knowledge more laborious to the student without classical education, it would not exactly, we believe, "disgust him with the study," much less seriously "retard the progress of ophthalmic investigations." Medicine, like all other sciences and arts, must have its peculiar and technical terms, and genuine words of foreign origin of convenient length, embodying some idea or some fact which our own language cannot adequately express, or which *avoid cumbrous periphrasis*, or answer some other good end, should always be heartily welcomed and properly used. Those who are at once the best scholars and ablest writers, among ophthalmologists as well as in all other departments, studiously avoid "big words," wherever and whenever they can just as well do without them. One of the most striking illustrations of this is furnished in the various writings of Von Graefe himself—one of "our German brethren," and, we do not hesitate to say, the most eminent oculist the sun shines upon. But of all the eminent writers in the English language, Dr. Gross seems to us the most unfortunate in his attempts to criticise and improve medical nomenclature. To corrupt that nomenclature by dragging into our vernacular words of hybrid formation, or words forcedly anglicized by cutting off from classic and well-understood scientific or technical terms their legitimate terminations, and adding to the "*castrated*" Latin or Greek body an "*English*" tail, is, in our opinion, truly "barbarous," and at least as censurable as the "nomenclature introduced by our German brethren." That our author is guilty of this practice, we have already alluded to before;* there is hardly a chapter in which such maltreated and mutilated words do not meet our compassionate eye; and we shall doubtless have a chance to refer to it again in our remarks on the next chapter that we intend to review. Further, Dr. G's consistency is sufficiently shown by his extending his ban to "synechia," "myocephalon," [a term not very frequently used by anybody, however,] and "anchyloblepharon," while he himself freely uses such terms as "anchylosis," "angeioleucitis," "podelkoma," "lithectasy," "staphylorraphy," "episiorraphy," etc., and, as a matter of course, such words as "conjunctivitis," "retinitis," and a host of other mongrels. But enough of this!

After a few words on examining the eye, the ophthalmoscope, and a few of the pathological changes which are revealed at the bottom of the eye—most of which, however, as well as the accompanying illustrations, are devoid of "practical usefulness," on account of lack of accuracy, [which judgment may be extended to almost all uncolored wood-cuts, and certainly to all the ophthalmoscopic illustrations and descriptions in the volume before us]—there is an able section on Foreign Bodies in the Eye, which, though brief, amply evidences the experienced surgeon. On the subject of granular and purulent ophthalmia there is, it would seem, considerable confusion in the author's mind. What he says of the treatment of conjunctivitis is, with few exceptions, very judicious; we most heartily agree with him in the denunciation of the abuse of nitrate of silver, so very common. It is, indeed, "a great mistake, yet one which is constantly committed, even by men otherwise experienced, to use strong applications to the eye in every form and stage of the inflammation." But his "poppy fomentations," "steaming," poultices," and all kinds of warm applications, we must in general regard as unphysiological, and as of no remedial value in these conjunctival affections, unless we want to favor blennorrhœic and purulent discharge for therapeutic purposes.

Under the head of Opacity of the Cornea, the author dismisses Nussbaum's suggestion for an artificial cornea with the mere dictum that it "caps the climax of absurdity." Now, without laying needless stress on the bad taste or unscientific and prejudiced spirit displayed in thus meeting a highly ingenious procedure, founded in the first place on a long series of experiments with rabbits, carefully and laboriously performed and reported; a procedure brought forward with a masterly analytico-critical review of the nature and various medicinal and operative means of treatment, forming, for aught we know, the best monograph on opacity of the cornea ever written; a procedure, finally, recommended only as a last resort in cases where all else is unavailing and hopeless, when, if ever, the maxim is applicable, "*Melius est remedium anceps quam nullum*,"—this language betrays a deplorable ignorance of current literature in relation to this subject, the less pardonable in a man of our author's position and claims, from his having been up to the present year the senior editor of one of the most able though short-lived journals of this country. Certainly the well-known case of the girl from the Zurich Asylum for the Blind, in which, on the 13th of September, 1859, the operation in question was successfully performed, should at least not have escaped him.

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* See Vol. XVII., p. 387.—Ed. Monthly.

The next subject of importance that we come to, the Treatment of Iritis, is also by no means "up to time." We honestly wish we could tear the leaf containing this (pp. 311 and 312) out of every copy of the work issued from the press. What our author has here written will have an immense influence throughout this whole country, both North and South, in temporarily perpetuating a deep-rooted error, and in delaying the appreciation of the proper treatment of iritis. To us it is positively horrible to think that the principles he lays down do, as he assures us they must, "govern the practitioner in the management of ophthalmic diseases generally." Indiscriminately blood-letting, calomel, jalap, antimonials, &c., at this day? We certainly have no idea to contravene the proof, deducible from actual experience, of the usefulness of mercurials—which, indeed, a due regard for the principles of evidence in therapeutical science should force every one to admit; but does not, we may well ask, Prof. Gross cling to the pernicious extreme, which, just as in the case of blood-letting, will, almost of necessity, lead many practitioners into the opposite—to be sure still more prejudiced—extreme? "But the great remedy in iritis, in all cases, excepting, perhaps, the most simple, is mercury carried to the extent of rapid ptyalism." "When the calomel is tardy in its action, it may be assisted by mercurial inunctions." "Mercury, then, is the great remedy in this disease, the remedy *par excellence*, and should be given early and freely, until it has effected the object for which it is exhibited." Although our space is limited, we must cite every word of what he says of the use of atropine, which will, beyond a doubt, have the effect on 99 out of every 100 faithful who read, believe, and "do likewise"—"never to make trial" of it:

"Much stress has been laid by authors upon the propriety of keeping the pupil well dilated with atropia during the progress of this disease. While every one must perceive the force of the injunction, the misfortune is that atropia does not possess this property; nor is there, so far as is at present known, any article that does. The moment the iris is actively inflamed, that moment it ceases to be influenced by narcotic applications; the pupil contracts, and no stimulus, however powerful, can afterwards excite it." Furthermore, puncturing the cornea finds no place among his therapeutic measures.

The idea of an operation our author recommends for obliteration of the pupil, "with a delicate needle through the cornea," is styled by a friend, in whom we have considerable confidence as an oculist, as being "*purely ridiculous*."

We are glad to see that to establish an artificial pupil, Dr. Gross regards *excision* of the iris "the most unexceptionable procedure;" but while taking up valuable space with describing and illustrating operations that he himself says are about obsolete—those by incision and detachment—he hurries over iridectomy in a manner that inspires us with pity for the unfortunate student who is to derive clear notions or a thorough knowledge thereof from our author. Another fact in relation to iridectomy claims our attention for a moment. It is, that one of the most brilliant advances of modern surgery, the relief of glaucoma, which until recently was deemed hopelessly incurable, is entirely ignored. We can hardly believe the author himself ignorant on this point, for he must have seen, we should have supposed, some articles published by ourselves several years ago, on Glaucoma and its Treatment, by Von Gräfe, Jäger, etc., in the *Philadelphia Medical and Surgical Reporter*, copied at the time, if we mistake not, into his own journal. The omission is the more remarkable as it was commented upon by a reviewer of the first edition already.

The subject of cataract is more extensively and thoroughly discussed than any other in the whole chapter. While the operation of extraction in one place is admitted to be the more nearly perfect, "the least objectionable," and again, "a much nicer and much more delicate" procedure than that of displacement or division, it "is adapted," our author states, "only to certain forms and conditions of cataract. Thus, it is absolutely necessary that the cataract should be hard; that there should be a very convex cornea and a sound pupil; and lastly, that the eye should not be situated too deeply in its socket; or what is the same thing, that there should not be too prominent an arch, interfering with the requisite manipulation." "Infancy and childhood are also bars to the operation." In another place, it is stated, "In regard to the relative merits of these operations, we are not in possession of any statistical facts which can aid us in deciding the question." The author's favorite method is the double operation of laceration and depression, of which, he says, "such is my confidence in its superiority, that I shall continue to practice it until there are more substantial reasons than I now have for abandoning it." He consoles himself that "no one procedure is exclusively applicable to all cases, and there can be no question that each is capable of affording excellent results in the hands of a judicious surgeon." Graefe's linear extraction and Schuft's method of scooping-out are not mentioned; aside from other omissions that might be named, we will but add, that Bonnet's superior and elegant mode of enucleation in extirpating the eye, and nearly all the nicer details which at this day rank the operation for strabismus among the most mathematically graduated and refined resources of surgery—have not yet become incorporated with Gross's system.

In the chapter devoted to the "Diseases and Injuries of the Female Genital Organs," the author, after having spoken of the modes of making uterine examinations, considers malpositions, inflammation, hypertrophy, atrophy, polypi, (or, as he delights to term them, "polyps,") tumors, carcinoma, and other disorders of the uterus. He then takes up diseases of the ovary, devoting a considerable space, very ably and profitably, to ovarian tumors and their treatment. The vagina and more external organs of generation next claim his attention, and after the investigation of their diseases, he takes up the important subject of vesico-vaginal and vesico-rectal fistulæ, or (as he would have us believe, a better appellation,) "fistules." And here we must, once more, even at the risk of becoming tiresome, record our regret at Dr. G's continued efforts at improving medical nomenclature. Truly, as a friend of ours said of him, "in his desire to escape the use of Latin terms, he employs those belonging to no language." The term "fistula" is an Anglicized term as much as are umbilicus, abdomen, uterus, and a host of others. Suppose that the names gonorrhœa, hydrophobia, &c., were dealt with as he deals with fistula, where would be our nomenclature in a short time? Verily, Piorry's attack upon it was scarcely less pardonable or reasonable. But to return to the subject-matter: The study of "fistules" being ended, that of laceration of the perineum is dispatched in a couple of pages, after which, the subject of diseases of the breast is ably handled in twenty-two pages, and this ends the chapter.

With reference to the method advised for examination of the uterus, (that on the back or side,) and the instrument to be employed, (the old cylindrical and bivalve specula,) we cannot agree with our author; for so far from regarding these as the proper means, we are convinced that both position and instruments are far behind the day, inefficient, and totally inadequate to furnish a proper appreciation of the condition of the pelvic organs. The position and speculum of Dr. Sims are infinitely superior in every case, and no one, we imagine, who has employed the two modes intelligently, can remain in doubt upon the point. The position, to which we allude, is not that upon the hands and knees, but that exhibited by diagrams in the address upon silver sutures, delivered by Dr. Sims.

The subject of malposition is very well treated. With regard to treatment he makes these pertinent and necessary remarks: "Inasmuch as this displacement is frequently, if not generally, essentially dependent upon engorgement of the uterus, the *treatment* must obviously be of an antiphlogistic character, consisting of rest in the recumbent posture, light diet, astringent and cooling injections into the vagina and rectum, and the application of leeches to the hypogastric and sacro-lumbar regions. If the woman be very plethoric, and the retroversion occurs soon after delivery, bleeding at the arm, followed by a brisk cathartic, will be useful. Under this management, the organ not unfrequently slips back into its natural position of its own accord. When there is much discharge, it may always be regarded as an evidence of inflammation of the uterus, or of this organ and the vagina, and the case should, therefore, be treated accordingly; that is, by leeches and nitrate of silver to the affected parts." For prolapse he speaks highly of episiorraphy, or removal of strips of mucous membrane the whole length of the vagina, and tacking the cut borders together. For the rheumatic origin of dysmenorrhœa he contends: "Believing that this disease is generally of a rheumatic, or rheumatico-neuralgic nature, I am satisfied that nothing will be found to be so effectual for its radical cure as the steady use of the wine of colchicum, in the dose of one drachm every night at bedtime, with half a grain of morphia, and ten drops of tincture of aconite, persevered in for several successive weeks. If plethora exist, blood may be taken from the arm, and the colchicum may be combined with the antimonial and saline mixture. The diet is properly regulated, the bowels are kept in a soluble state, and exposure to cold is carefully guarded against. Great relief will generally follow the application of a large opium plaster to the lower part of the spine, renewal being effected once a week. If the patient is anæmic, the colchicum may, in a short time, be superseded by the use of quinine and iron, in union with strychnine and extract of aconite. When the disease is dependent upon an unusually tight orifice of the uterus, the treatment should be aided by the occasional passage of the bougie; but such an expedient will, I fancy, rarely be necessary."

Very short articles are devoted to hydrometra and pysometra, in which no new views are brought forward.

To the treatment of ovarian cysts the author has evidently given careful and serious consideration. He says, "The operation, as now practiced, is performed at the middle line of the abdomen, either by the long or short incision, as it is termed, the choice depending upon the nature of the case, especially the size of the tumor, and the presence or absence of adhesions. McDowell, in his first case, made his incision on the left side, some distance from the outer edge of the straight muscle, its length being nine inches. Subsequently, he cut through the linea alba, and this is the place now universally selected for the operation, the patient lying upon her back on a table, with the head and shoulders well elevated, and the feet resting on a high chair. The bowels and bladder are thoroughly emptied as a preliminary step, and the health put in as good a condition as the exigencies of the case will admit of. During the operation care is taken that the patient be kept perfectly warm. The superficial incision, commencing just above the pubes, is made with an ordinary scalpel, and extends through the skin and cellular tissue. The linea alba is then pierced, when, a probe-pointed bistoury being inserted, the wound is enlarged to any extent that may be deemed necessary. In some instances it has been carried as high up as the xiphoid cartilage of the sternum. No vessels are divided in this stage of the operation. The tumor, if perfectly loose, is now separated at its pedicle, previously surrounded with a stout, well-waxed ligature, drawn very tightly, and secured with three knots, one end being cut off close, while the other is brought out at the inferior angle of the wound. If the pedicle is very large, it will be well to pierce it with a needle armed with a double ligature, one of which is then tied on each side. Too much care cannot be taken in this respect, otherwise, the thread slipping off prematurely, the patient may perish from hæmorrhage. Occasionally it becomes necessary to embrace the Fallopian tube in the ligature, owing to its intimate connection with the ovary. Within the last eighteen months the separation of the pedicle has occasionally been effected with the *écraseur*, the first operation of the kind having, I believe, been performed by Dr. W. L. Atlee, of this city. It does not always, however, afford complete immunity against hæmorrhage; and for this reason the ligature should generally have the preference.

"If the tumor be adherent, the attachments must be broken up with the fingers, the knife being used only when they are so strong as to refuse to yield in this way. The instrument, however, must be employed warily; chiefly, indeed, for the division of narrow, slender bands, for, if the adhesions are unusually firm and extensive, such a procedure would inevitably be followed by copious hæmorrhage, and violent, if not destructive, peritonitis.

"The operation, in the event of the tumor being unusually bulky, may generally be greatly facilitated by letting out some of its contents with the knife or a large trocar, as may always easily be done when they are of a fluid character. The bowels, during the dissection, should be carefully protected by an assistant, and kept warm, if necessary, with flannel wrung out of water.

"The extirpation being completed, the bleeding arrested, and any fluid that may have fallen into the pelvic cavity removed with the sponge, the ligature attached to the pedicle is brought out at the lower angle of the wound, the edges of which are next to be approximated by numerous points of the twisted suture, the pins being carried close down to the peritoneum, in order that, in the event of recovery, the woman may afterwards not be the subject of hernia. Long adhesive strips should be stretched across the intervals of the pins, nearly round the abdomen, which should be still further supported with a compress and a bandage. To avoid irritation, Mr. Handyside, in 1846, carried the ligature through the recto-vaginal *cul-de-sac* into the vagina, and a similar procedure has since occasionally been pursued by other surgeons.

"But the most approved mode of disposing of the pedicle is to dispense with the ligature altogether, and to bring it out at the bottom of the wound, fixing it there by means of a clamp, as originally suggested by Mr. Duffin, and since practiced by Hutchinson and other surgeons. The instrument consists of two parallel plates of steel, thinly gilded, jagged on the inner surface, and furnished with a screw at each extremity, so as to admit of firm, equable compression throughout. Care should be taken not to drag the uterus; and hence, if the pedicle be very short, it may be necessary to leave a little of the cyst, in order that the parts may be the more readily drawn out and secured by the clamp.

"The woman is now carried to bed, with her head and limbs elevated, to prevent tension of the abdomen, and a full dose of morphia—by which I mean at least one grain—is given, for the triple purpose of allaying pain, inducing sleep, and insuring tranquillity of the bowels, which should not be disturbed for days together, except by an enema, in the event of unusual flatulence and colicky suffering. The anodyne is from time to time repeated; the diet should be bland, but nutritious; thirst is allayed by ice, held in the mouth until it is dissolved, but no water is allowed, lest it cause vomiting; the urine is drawn off at least twice a day; and the temperature of the apartment is regulated by the thermometer, being uniformly kept at about 78° of Fahrenheit. Above all, care is taken that the patient is not exposed to draughts. As the great danger after this operation is peritonitis, everything should be done to ward off the attack, an ounce of prevention here being worth many pounds of cure. If serous effusions should occur early in the case, the lower extremity of the wound should be partially reopened, to admit of their easy escape, experience having shown that they are often very acrid, and, therefore, prejudicial to recovery. The pins should not be removed until there is firm union, and the parts should be well supported for a long time afterwards. The ligature is detached at a period varying from one to several months."

It remains for us now to examine the author's article upon vesico-vaginal fistula. It is, of course, merely a *résumé* of what has been done of recent years for the cure of this dire affection, and in so far as relates to that, is faithful, explicit, and complete. But either through negligence or ignorance of what we feel to be the facts, he has so utterly confounded the names of Sims and Bozeman in awarding praise to the discoverer of the best mode of radical operation as at present practiced, that posterity, if forced to form its judgment from the work before us, would be completely at a loss to decide between their respective merits. Take for example the following passage:

"The *radical treatment* of vesical fistules has recently been brought to a high degree of perfection, almost exclusively by the labors of two practitioners, Dr. Sims, of New York, and Dr. Bozeman, of Alabama, the former of whom led the way in this laudable enterprise, while the latter has materially assisted in improving it by the invention of a highly ingenious suture. Previously to this, occasional cures of this loathsome affection had been effected by different American surgeons, especially by Dr. Hayward, of Boston, Dr. Mettauer, of Virginia, and my colleague, Prof. Pancoast. In the account which I am about to give of this operation, I shall limit myself chiefly to Dr. Bozeman's process, both because it is extremely efficacious, and because he has kindly placed at my service a complete set of drawings illustrative of its various stages.

"The suture of Dr. Bozeman, which has already done such excellent service, is called the *button suture*, and is composed, first, of a piece of sheet lead, generally of an oval shape, perforated by several apertures, about the third of a line in thickness, and variously bent, in order to adapt it to the shape of the parts; secondly, silver wire, very delicate and flexible, each thread being eighteen inches in length; and thirdly, leaden crotchets, to retain the apparatus in place."

This great triumph of modern surgery rested in its discovery upon three particulars, viz.:

1st. The use of metallic sutures instead of silk.

2d. The adoption of a position which would expose the whole vagina and put it on the stretch.

3d. The discovery of a speculum which, while it aided in exposing the parts, left room for the operator to work.

The whole profession to-day, or at least an overwhelming majority, are fully convinced that Dr. Sims introduced *all* these, and that to him, and him alone, belongs the gratitude of humanity in this connection. Upon this point, therefore, we will waste no time; but let us see how our author deals with the three essential particulars which we have enumerated, and let the unbiased reader form his own conclusion concerning the justice, intelligence, and correctness of his position. With reference to the first of these, what we have already quoted will suffice, with the remark that the button and crotchets are not at all essential, and almost universally dispensed with; and that of the wire, Dr. Gross found himself bound in another connection to admit that it "was first introduced into regular practice by Dr. Sims, of New York, to whom too much credit cannot be awarded, for what must be regarded by every surgeon as one of the greatest additions to our armamentarium of the present day."—(Vol. I., p. 304.)

The second is dealt with thus: "The *position* of the patient is a matter of paramount importance. When she is obliged to take chloroform, as may be the case when she is very timid, she must lie upon her back, as in the operation of lithotomy; but it will be far better, as it respects a full and ready view of the parts, for her to rest upon her knees and forearms, upon a couch, or a low, narrow table. In this manner, the head and shoulders being depressed, the nates may be elevated to any convenient height, and the light so arranged as to fall directly upon the vesico-vaginal septum in its entire length. The thighs, separated about eight inches from each other, should form a right angle with the table, and the clothing should be so light and loose as to take off all pressure from the abdomen and its contents, which will thus tend to gravitate towards the epigastric region. An assistant on each side lays a hand in the fold between the gluteal muscles and the thigh, the ends of the fingers resting upon the great lips. The nates being now simultaneously pulled upwards and outwards, the air rushes into the vagina, widely dilating it, and so affording an easy view of the fistule, as well as of the mouth of the uterus."

No one is credited with this, but the third, immediately following the text in the same paragraph, is thus awarded:

"The exhibition will be rendered still more perfect if the perineum, the sphincter muscle of the anus, and the recto-vaginal septum, be well raised with Dr. Bozeman's speculum, or with the duck-bill speculum of Dr. Sims, of which, in the latter case, there should always be at least two sizes," what is figured as "Bozeman's Speculum" being, *in fact*, Sims', with some immaterial alterations.

Throughout this part of the work, the name of Dr. Bozeman appears repeatedly, that of Dr. Sims rarely, and always in the background. Now, though we have no desire to charge our author with intentional malfeasance in this matter, we do claim that he has allowed himself to be blinded to the truth, which was always *perfectly attainable;* that no one who aspires to the dignity and the eminence of authorship should allow himself to remain ignorant on so important a point; and that his essay upon "vesico-vaginal fistules" reveals a glaring instance of that "occasional injustice," which, as we have remarked, is discernible in his work.

As already stated, the concluding section of the chapter on "Affections of the Mammary Gland" is excellent.

As far as we have promised—and this was as far as the limits of our pages permitted—we have thus presented our readers with criticisms on portions of the two volumes before us. As to the two chapters specially taken up, we have not relied on our own opinions only, but had these strengthened by the views of two professional gentlemen, respectively eminently qualified to "pass judgment" on these subjects.

With a candor and a modesty which we cannot but regard as truthful and heartfelt, the author has told us in his Preface that the work should be regarded "as embodying the results of a large personal, if not of a rife, experience, of extensive reading, and much reflection; in a word, as exhibiting surgery as I myself understood it, and as I have for so many years conscientiously taught it. If upon certain points of doctrine I have been obliged to differ from co-laborers of acknowledged authority and of the highest professional eminence, it is because I have found it impossible to do otherwise. As Luther said at the Diet of Worms, 'Hier stehe ich, ich kann nicht anders,' so I may declare that what I have here written, I have written under a solemn conviction of its truth, though certainly not without a strong sense of my fallibility and shortcomings." Having, on our part, unhesitatingly published what we deemed examples of this fallibility and these shortcomings, we now record it as our final, unbiased opinion, that in spite of its faults, both of omission and commission, both of manner and matter, *all in all, Gross's System of Surgery is a work of which the most eminent surgeon that ever lived might justly be proud to have been the author.*

The Index is unusually elaborate, and we have no fault to find with it. The mere typographical execution of the volumes, too, meets with our entire approval. Of the wood engravings, many are most miserable, though a few are rather above, and the majority quite up to, the standard that seems to have been adopted, in general, for text-books. As to the form, we should have liked to have had the author or publishers profit by the suggestion of a reviewer of the first edition, to make out of the two heavy, almost unwieldy tomes, half a dozen, or at least three or four volumes. These would have been more easy and convenient to handle, the systematic arrangement of the subjects treated of would well have admitted of such a division, and the more especially would such a course have facilitated the use of the work, as designed, as we are told, to "serve the practitioner as a faithful and available guide in his daily routine of duty." The binding seems durable, and the general appearance is of the same style, and as neat as that of most of the books issued by Messrs. Blanchard & Lea. There is one offence, however, that these publishers commit, which, though seemingly very trifling, is too grave, and, in this case, in our opinion, unpardonable, than that we should not censure them for it as severely as it is possible for us to do. It is a wrong, too, in which they seem determined to persist in spite of the complaints of the profession. We remember that even their own city contemporary, the independent *Medical and Surgical Reporter*, has already on one or two occasions sharply taken them to task for the same offence. We refer to their objectionable, aye, abominable, rule of appending page after page of advertisements and puffs of their publications. It is a nuisance. Thus, here, f. i., are 32 pages added to a volume already so bulky that it cannot be taken up with ease. And there is no excuse for it. Messrs. Blanchard & Lea are well known as medical publishers; they have unsurpassed facilities for reaching, and to a large extent controlling, the avenues to the medical mind; they have the benefit of a quarterly and a monthly journal of deservedly and actually universal circulation; they send catalogues of their publications periodically to the physicians in every part of this country; they are free to advertise in every issue of every medical as well as lay journal throughout the land; and there is certainly no objection to their sending their catalogues with every book that leaves their establishment; but why can they not put them in loosely? Let them not force their customers to lug them around wherever they go, with every book. ⁂

EDITORIAL AND MISCELLANEOUS.

— Owing to the length of several articles in this Number, we have but little space at our command. The Quarterly Reports on Materia Medica and on Ophthalmic and Aural Diseases have been crowded out, and we but introduce here the following circular letter, issued by Drs. Mott and Homberger, in reference to the Universal Society of Ophthalmology, of which we have already spoken in our last issue. All the medical journals have been requested to publish the same; and, while we accede to this request with great pleasure, we would urge upon all our readers to send their names for membership to either of the gentlemen named.

"*To the Medical Profession of the United States.*—The object of the Universal Society of Ophthalmology is known to you, and we hope its foundation will mark the present year in the annales of Medical Science. We are fully satisfied that the Society will take, from its first meeting, the position which it has a right to ask among scientific bodies. We believe it is now the proper moment to solicit your help and sympathy.

"We invite you to associate yourself with the Society, which will meet for the first time from the 30th of September to the 3d of October, 1862, in Paris.

"Your desire to be enrolled on its list of membership is requested to be made known to one of the undersigned, who will forward it to the Central Committee.

"*The Committee of the City of New York:*

"VALENTINE MOTT, M.D., 1 Gramercy Park.
"JULIUS HOMBERGER, M.D., 24 West 12th Street.

"NEW YORK, *May* 20*th*, 1862."

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LECTURES, MONOGRAPHS AND CASES.

An Address in Commemoration of the Life and Character of the late Charles Edward Isaacs, M.D., *delivered to the Graduates of the Long Island College Hospital, Brooklyn, N. Y., at the Annual Commencement, on the Evening of July 14th,* 1862. By Joseph C. Hutchison, M.D., Professor of Operative Surgery and Surgical Anatomy.

Graduates of the Long Island College Hospital:

According to an agreeable custom, I welcome you into the ranks of the medical profession — a profession which, by Christian and Painim, has been esteemed one of the most Godlike of human avocations. Our relation of preceptor and pupil has terminated. Henceforth we are equals—members of the same great fraternity. You go forth honorably enrolled among the graduates of the Long Island College Hospital, carrying with you its broad seal, which, whether at home or abroad, will secure for you all the rights and privileges that attach to any similar institution in the land. Your acquirements have been tested by what may have seemed to you a rigorous and painful ordeal But it can be scarcely less painful to you than the responsibility which the Council and Faculty feel in declaring to their fellow-citizens your fitness for the duties incident to the profession of your choice. Do not disappoint them.

It is usual, on occasions like the present, to occupy the hour with words of counsel and advice, or in indicating what are the "requisites for success" in the medical profession. I trust I shall be pardoned for digressing from this time-honored custom; for it has been generally observed that few things are so liberally bestowed, or uttered with so little effect, as good advice. I take it for granted, gentlemen, that you are aware of the true character of the profession you have selected as your occupation for life--that you have estimated its responsibilities, and the nature of its duties. I turn to another more agreeable, and I trust more profitable, theme. It was the maxim of Alphonsus of Arragon, that dead counselors are safest; and who does not know that the characters of the wise and good among the departed exert a more potent influence than the most salutary precepts or the most pathetic persuasions of the living, because free from vanity, arrogance, or superciliousness? I propose, therefore, to counsel you through the life and character of one who, by his industry, professional integrity and scientific attainments, had risen to an eminent position in our profession, and yet of whom it may be said, he left not a single enemy. I refer to CHARLES EDWARD ISAACS, M.D., who died in this city on the 16th of June, 1860.

This remarkable man was born at Bedford, Westchester County, N. Y., on the 24th of June, 1811. He was the son of William and Mary Isaacs. His father was a merchant and farmer; Charles was the youngest of the family, which consisted of three sons and one daughter. Almost from infancy he manifested an unusual fondness for books, especially the Bible, from which he frequently quoted passages and parts of chapters, and often discussed the controverted points of faith with his mother. He attended the parish school kept by Mr. Samuel Holmes, where he studied the classics; and at the age of eleven or twelve he could read the Greek Testament with facility. We are told that "he early evinced marked preferences for the natural sciences. The anatomy of insects and the lower animals was carefully studied in a practical way, and he exhibited a peculiar fondness for Botany and Geology. Even at a very early age he was accustomed to saunter in the fields and woods, gathering specimens of all sorts from the animal, vegetable, and mineral kingdoms. This striking peculiarity early indicated his choice of a profession, and his mother wisely allowed him to follow his own inclinations, his father having died when he was but seven years of age."—(*Amer. Med. Times, June*, 1860.) He commenced the study of medicine with the late Dr. Belcher, of New York, who was a relative of the family, and attended his first course of lectures in the College of Physicians and Surgeons, New York. He subsequently entered the office of Dr. Graves, of New York, who afterwards removed to Baltimore, and was accompanied by his pupil. "He graduated in medicine at the University of Maryland, in 1832; after remaining in Baltimore for a short time, he went to North Carolina. During President Jackson's administration, he received the appointment of surgeon to accompany the Cherokee Indians in their removal beyond the Mississippi. He traveled extensively among the Indian tribes and through the Southern States; he entered the army in 1841; and of fifty candidates who were examined by the Army Board of Surgeons, only six passed, of whom Dr. Isaacs stood *first*. He was first sent to Governor's Island, and from thence, after a few months, was ordered to repair to Fort Kent, on the eastern boundary of Maine. There he remained about two years; and was then ordered to Copper Harbor, Lake Superior, at the time of the excitement relative to the discovery of copper mines in that region."

Dr. Isaacs left this station in June, 1845, and from thence went to Fort Niagara, Youngstown, New York. The following November, being in bad health, he obtained a furlough, and came to the City of New York for professional advice. Before the expiration of his leave of absence he resigned his office, and in connection with Dr. W. H. Van Buren established a private school for medical students in Greene Street. In September, 1847, he returned to Youngstown, and entered into private practice with his friend, Dr. T. G. Catlin. At the end of six months he left to accept the position of Deputy Health Officer on Staten Island; after being there a month he resigned, and returned to Niagara County to resume his practice with Dr. Catlin. In September, 1848, he received the appointment of Demonstrator of Anatomy in the College of Physicians and Surgeons, which he reluctantly accepted at the urgent solicitation of his friends. His unwillingness to accept the position arose from his humble estimate of his ability to discharge the duties which it involved, and for which I may add his friends considered him peculiarly fitted. He retained this place for several years, and afterwards officiated as Demonstrator and Adjunct Professor of Anatomy in the University Medical College. During the intervals of the lecture term he was occasionally employed as surgeon on the European steamers. He was thus enabled to avail himself of the advantages offered by the medical institutions of the Old World, and at the same time to reinvigorate himself for the labors of the winter in his favorite department of anatomy.

During his residence in the City of New York, Dr. Isaacs was not actively engaged in practice. His time was occupied in studying the book of nature, in making investigations into the intricacies of science, and in instructing students, who eagerly sought the varied stores of knowledge which his gifted intellect was ever ready to dispense.

At the urgent solicitation of a few friends, who were actuated by a desire to promote his worldly comforts, Dr. Isaacs took up his residence in Brooklyn, in the spring of 1857. His personal acquaintance with the members of the profession here did not perhaps exceed half a dozen, and the number of his non-professional acquaintances was still more limited. He came reluctantly. He had hitherto failed to succeed in private practice, and he feared that he should have to undergo a prolonged probation before he could secure a competency. His success exceeded the most sanguine anticipations of his friends, and he at once entered upon a large and lucrative practice. You, gentlemen, who are about entering upon the active duties of your profession, perhaps among strangers, will naturally feel an interest in knowing how Dr. Isaacs' pecuniary success was so rapidly accomplished here, after years of stern conflict with opposing and discouraging fate. His personal appearance was by no means attractive or commanding. There was nothing pretentious or adventitious in his character—no pliant, time-serving falseness—nothing that savored in the most distant degree of empiricism. He would have scorned to indulge in the vulgar tricks of the trade, as they are called. Like our Rush, Physic, Nath. Chapman, Bard, Post, Hosack, Francis, and all those whose names are revered in our profession, he said in every action,

"Or grant an honest fame, or grant me none."

Those who were instrumental in bringing him here, knew that notwithstanding his high reputation, his success in private practice within a *short* time must be through his professional brethren. The question arose, how he could be introduced personally to the physicians of the city at once and in a proper manner? The happy thought occurred to a friend whose name I would not dare mention, to invite him to deliver some lectures on Surgical Anatomy at the Brooklyn City Hospital immediately after he came here. The members of the profession attended in large numbers, for medical lectures were at that time a novelty in Brooklyn, and Dr. Isaacs at once became personally known to them. They took him warmly by the hand, received him into their hearts, and, I say it to their honor, that through their instrumentality he was soon inducted into a large practice. Among the many noble deeds of the medical men of Brooklyn, this one will ever stand prominent. Self-interest, envy, jealousy, and all uncharitableness were forgotten, and each seemed to emulate the other in the desire to promote the material interest of one whose exertions had been fettered and clogged by poverty and ill health; whose life had been a constant struggle with adversity.

As an Anatomist, Dr. Isaacs was not excelled in this country. Indeed, I was informed by one of his most intimate and devoted friends, himself a distinguished professor of anatomy, that in this fundamental department of medicine he had no equal in the land. He was not only thoroughly versed in all that relates to special and surgical anatomy, but in the departments of microscopic, pathological, and comparative anatomy, he was an authority. He availed himself of the ample facilities which his position as Demonstrator of Anatomy in the College of Physicians and Surgeons and in the University Medical College afforded, and the opportunities which his medical friends were but too ready to offer, to engage in the most abstruse and original investigations in anatomy, histology, and pathology; and so great was the respect for his opinion upon questions relating to these subjects, that when expressed it was considered conclusive. Dr. Isaacs' monograph on the structure and functions of the kidney, published in the Transactions of the New York Academy of Medicine, Vol. I., Part 9, is a monument of patient industry and scientific zeal worthy of imitation. "Entering upon the investigation of this subject," he says, "without any preconceived theory, it has occupied much of my attention for some years past, and for the last twelve months I have labored upon the subject almost daily, sparing neither time, trouble, nor expense, and carefully guarding against arriving at any conclusion until after long-continued and repeated examinations. The facts from which deductions have been drawn have all been obtained by the careful examination of the kidney in many animals, and especially in the frog, turtle, snake, alligator, fish, bird, mouse, rat, squirrel, cat, dog, raccoon, rabbit, hog, sheep, deer, elk, moose, ox, horse, black bear, rhinoceros, monkey, and in man." This paper attracted considerable attention in this country and abroad. It was translated and republished in the medical journals of France and Germany, and was pronounced by the ablest living microscopical anatomist, Ch. Robin, of Paris, "the most valuable contribution to structural anatomy that has been made for many years." It would be inappropriate on this occasion to refer to the original facts presented in this celebrated paper. They have already been incorporated into some of your textbooks, and have become the common property of the profession.

His paper " On the Extent of the Pleura above the Clavicle," read before the New York Academy of Medicine, April, 1857, contains the result of a series of carefully conducted and laborious researches into the relative position of the pleura to the clavicle. By these investigations he settled an important anatomical fact: that the pleura extends above the clavicle to a much greater height than had been previously supposed by the best anatomical authorities. This paper is one of great importance to the physician, the surgeon, and the medical jurist, and adds new lustre to the name of Isaacs as a contributor to the advancement of his profession, and as a benefactor to his race. Another anatomical fact to which he first directed attention was, that the recto-vesical *cul-de-sac* extends downwards much nearer to the base of the prostate gland in the negro than in the white subject, and that it receded from the prostate in a regular ratio as the admixture of white blood with the negro increased. The value of this observation will be appreciated by *you*, gentlemen, and its important practical bearings duly estimated by those of you especially who come from the South.

It were not surprising that Isaacs, like Morgagni, Vesalius, Hunter, Godman, Physic, and Horner, should have been an enthusiast in that department of our profession in which he was consummately skilled, the structure of the human body; nor that he should have constantly urged upon the attention of his pupils the importance of a knowledge of anatomy; not the names, or general forms, but the intimate structure, the connections and sympathies in the normal forms and functions, and the more frequent diseased conditions of the various organs and tissues of the body. The men whose names have survived, or are likely to survive, their natural lives, have been true to their professional studies, and enthusiasts in their art.

As a Surgeon, Dr. Isaacs occupied a prominent position, and his reputation was rapidly increasing. His profound knowledge of anatomy and surgical pathology, his skill in diagnosis, his clear and comprehensive judgment, and his undaunted moral courage, all combined to fit him for the responsible duties of a surgeon. He possessed a thoughtful, contemplative and conservative cast of mind, which induced him to deliberate carefully upon all the circumstances of his cases; and having satisfied himself what course was best for his patient, he honestly and fearlessly pursued it, never shrinking from the performance of the most hazardous operation when the welfare of his patient demanded it; nor yet was he tempted by the vain and dangerous passion for applause, the ephemeral *éclat* which a formidable operation sometimes brings, to waver between duty and expediency. He was not what is sometimes called a brilliant operator. Calm, collected, and cautious, his incisions were made with accuracy and deliberation, with no desire to excite the plaudits of his spectators, or to charm them into an opinion of his superior skill by dangerous and rapid manipulations. John Bell has well remarked: "This passion for applause, so natural to us, so subservient to our interests, so flattering to our self-love, so apt to be excited by the presence of strangers who are never to see us again, and are to judge of us by one single act of skill and courage—this selfish and dangerous passion, which every ingenuous man must confess he feels lurking within his own breast, cannot be guarded against too much! If it is ever to be extinguished, it must be by a thorough study of the principles of the science, for a perfect education will carry a man's thoughts beyond this poor ambition. A man perfectly educated, who is accustomed with dissection, and has fairly cultivated his natural powers, is occupied with higher thoughts. He looks inward for approbation, and cares not for the ignorant applause of those who estimate his talents by the rapidity of his strokes—by the movements of a stop-watch. * * * He affects no masterly turns of his knife or hand, no rapidity of execution, no airs of self-approbation to extort applause; but performs his operation in that calm, solemn and impressive manner, which persuades his patient most eloquently of his deep regard. * * * If he operates with confidence, it is not of that rash and headlong nature which arises from a vain assumption of natural abilities, of native courage, of address and dexterity inherited from his birth, but such as proceeds from a rational and modest study of that knowledge which is essential to success."

As a Medical Practitioner, he was remarkable for his judgment in the selection and application of remedial agents, and for boldness and decision when circumstances demanded it. He possessed a memory remarkably retentive of facts which he had observed or learned from others, and had thus acquired a fertility of expedients such as I have rarely known in any one. With a due regard for the *vis medicatrix naturæ*, his therapeutic resources sometimes seemed almost illimitable; and those of us who were accustomed to hear him detail his cases, were often amused as well as instructed by his enumeration of the variety of remedial agents he successively resorted to in treating his obstinate chronic cases. In such cases especially his perseverance when others would have been discouraged, and his fertility in applying remedies, sometimes bold and often novel and striking, were conspicuously shown. Without being captivated by visionary theories, or heedlessly adopting new modes of practice of questionable utility, he was always among the first to make himself practically acquainted by cautious experiments with the reputed powers of such new articles of the materia medica and novel therapeutic suggestions as were recommended by reliable authorities. In all the departments of medicine, the elementary as well as the practical, he was remarkably well informed. In the discussions in our medical associations he was made almost the final umpire, whenever questions involving recondite and abstruse investigations were considered. He expressed his opinions with modesty and a degree of diffidence almost amounting to reluctance, even upon subjects on which he was universally regarded as an authority.

The estimate in which he was held as a practitioner of medicine and surgery was exhibited by the extent to which his medical brethren availed themselves of his services as a medical counselor. No one among us was called so frequently as a consulting physician, not by the tyro alone, but also by those of mature years, ripe experience, and rare professional skill. He was scrupulously correct in all that related to the ethics of the profession, and his intercourse with his professional brethren was marked by great suavity of manner. When called to consult with other practitioners, however humble or exalted their positions, his conduct was such as to secure their confidence and affection. There was no assumption of superiority, no attempt at dictation, nothing in his manner that could excite jealousy; but on the contrary, he manifested the most delicate regard for their opinions and professional rights, and was careful to avoid doing anything that would prejudice them in the estimation of their patients. He was ever ready to assist his fellow-practitioners by his advice and experience, whether the information desired had special relation to themselves or those under their charge; and whenever he had it in his power to render a service to a member of the profession by a word of commendation, it was cheerfully bestowed.

As a Lecturer, Dr. Isaacs was simple, natural, and unaffected; his delivery was not impassioned; he wanted more energy and vigor in his voice and composition; he aimed not at the graces and elegancies of diction, or soared into the regions of theory or fancy, yet his lectures were always interesting, abounding in stores of facts and cases, and enriched by illustrations drawn from his own experience and observation. He possessed the happy faculty of enlivening the tedium of dry matter by some stroke of wit, a happy pun, an anecdote or quotation. His lectures upon anatomy were remarkably perspicuous and accurate; indeed, we have never listened to any teacher of anatomy whose demonstrations were so clear and impressive. So skillful and dextrous was he in performing dissections, that he often made them in the presence of his class, demonstrating, while lecturing, the different structures in succession as they were unfolded by the knife.

Dr. Isaacs fully appreciated the benefits and importance of Medical Societies, and participated largely in their proceedings. He was an active member of the Medical Society of this County, whose records abound in the results of his experience, and at the time of his death was one of its Censors. He was one of the founders of the New York Pathological Society, and contributed largely to elevate it to its present high position. In this Society he held successively the offices of President and Vice-President. Of the New York Academy of Medicine he was a zealous member; was at one time one of its Vice-Presidents, and no papers that have ever emanated from that learned body have contributed more to give it its wide-spread scientific reputation than those which he presented. He felt a deep interest in the elevation of the profession. To this end, he strongly urged the importance of elevating the standard, both of preliminary education and of the professional attainments required of candidates for graduation.

Thus far I have considered the character of Dr. Isaacs in its professional aspect; but I should do injustice to his memory did I not refer to the brilliant qualities of his heart, which so endeared him to all who were admitted into the favored precincts of his private friendship. He was my friend; but I utter not the language of friendship when I speak his praise. It is difficult to particularize excellencies in a life and character so rich in all that was noble and beautiful in human nature. He was a man without guile, affable and accessible to all; the native simplicity of his manners and his gentle feelings excited profound respect and conciliated universal esteem. He was never provoked to use a harsh expression under the most trying circumstances. He had it not in his heart to do so. An annoying circumstance which would cause others to manifest undue excitement, would call forth from him a playful, ironical remark, and then be dismissed from his thoughts. And yet his soft and gentle nature never subjected him to the imputation of weakness; in mind and eye he was every inch a man. "Experience demonstrates," says Dr. Gregory, "that a gentle and humane temper, far from being inconsistent with vigor of mind, is its usual attendant; and that rough and blustering manners generally accompany a weak understanding and mean soul; and are indeed frequently affected by men void of magnanimity and personal courage, in order to conceal their natural defects."

He was in a striking degree unpretending and modest. These characteristics gave him a great repugnance to being brought before the non-professional public under any circumstances. When urged to make the microscopic examinations in the celebrated Burdell murder case, the darkest crime that has marred the calendar of the criminal courts of this country, he unhesitatingly declined, notwithstanding the prospect of a large fee, because, as he subsequently stated to a friend, he did not want his name paraded in the newspapers or bandied in the courts of justice. His modesty made him reluctant to promulgate his opinions, or to insist upon their correctness or importance when they conflicted with the opinions of others. And yet to those who enjoyed his friendship, the correctness of his sentiments and internal convictions, and his discriminating knowledge of men and things, were too conspicuous not to be appreciated. Selfishness and personal ambition was not a part of his nature. This was evinced by the moderate competence with which he always contented himself. His utter disregard of his pecuniary interests is not to be commended; for it often deprived him of the comforts, and even the necessaries, of life. While acting as Demonstrator of Anatomy in New York, he often had chronic cases requiring careful investigation placed under his charge by his professional brethren, which he frequently turned over to others whom he considered more competent to treat them than himself, often against the protestations of the patient. This was at a time when his annual income was less than a thousand dollars. He had not time to make money. He was at this time wholly occupied in making investigations into the most interesting and secret departments of our science, and he pursued them with a steadfastness of purpose and industry rarely equaled.

He was eminently benevolent in his feelings, and exhibited a warm and generous sympathy for the afflicted and suffering, which at once engaged their affections and confidence. This is, in many cases, of the utmost consequence to the recovery of the patient. He had a rare fund of humor and ready wit, which, with anecdote, happily told, was judiciously used in the sick-room. His patients loved him as a personal friend. I have been surprised since his death to discover the sincere affection which was entertained for him by *all*—the poor and humble as well as the rich and influential, who enjoyed the benefits of his professional skill. Few persons possessed in so large a degree what Shakspeare so emphatically calls "the milk of human kindness." When he had a suspicion that his patients were poor, he would, by the most delicate means in his power, and in a manner least offensive to their feelings, endeavor to avoid receiving compensation for his services, without leaving behind a sense of obligation. As an illustration of this noble trait of his character, I trust I shall be pardoned for introducing here, even at the expense of brevity, a copy of a letter which has fallen into my hands since his death.

BROOKLYN, *March* 12*th*, 1860.

Dear Miss H.—I have just read your letter containing a draft for $100, for which please accept my thanks. You remember some months ago I told you that I would never render you a bill for medical attendance on your father; on the contrary, that you were a thousand times welcome to anything which I had done for him, and that I only regretted that it had not been in my power to have done more. I have now hesitated whether I should accept your kind present, but as you state you can send it without the slightest inconvenience, I have concluded to do so, more especially as otherwise you might perhaps (although wrongly) feel under too much of an obligation. I shall, however, devote at least the greater portion of this sum to the relief of those whom we so often meet with, who are oppressed both by poverty and disease. I beg leave, in conclusion, not only to return my sincere thanks for your very excellent present, but also for the kind expression of feeling which my poor services have elicited. I hope you will always remember that I feel a deep interest in your welfare, and that, with the highest regard and esteem, I remain most truly your sincere friend, C. E. ISAACS.

May I not ask, in the language of Voltaire, "Is there anything in the world more estimable than a physician, who, having in his youth studied nature, and known the springs of the human body, the ills which torment it, the remedies which may relieve them, modestly practices his art; takes equal care of rich and poor; receives his fees reluctantly, and employs them in succoring the indigent?" Do not infer, gentlemen, that I have alluded to the benevolent principles of Dr. Isaacs because they are rarely met with in our profession. No, no; the exercise of the healing art by a man of noble mind makes "man approach nearer to the gods," for "of the Most High cometh healing." "I believe," says Dr. Johnson, "every man has found in physicians great liberality and dignity of sentiment, very prompt effusion of beneficence, and willingness to exert a lucrative art when there is no hope of lucre." And who that is familiar with the biographies of physicians, from Hippocrates to those of our own time, cannot attest the justness of the compliment enunciated by the great moralist?

While he fully accepted the maxim of the great Boerhaave, that "the poor are the best customers, because God will be the paymaster," with those who were able to pay a pecuniary compensation for his services he deemed it a point of honor to adhere to the rules adopted by the Medical Society of the County of Kings relative to pecuniary acknowledgments, with as much uniformity as varying circumstances would admit. It was not the love of money, but "a strict sense of justice and honor towards each fellow-member of the profession, which prevented him from undervaluing his services by charging beneath the customary rate, with a view to draw patronage by exciting comparisons." He acted on the principle that "a practitioner may settle his demands with his patrons on whatever terms he pleases, but he has no right to make the law, or change any established usage to the prejudice of his brethren. The reputation of a *cheap doctor*, after all, is neither dignified nor enviable."

Dr. Isaacs was eminently social in his feelings. There was a peculiar charm about his character, which drew around him admiring and steadfast friends, and made him the delight of the social circle. With a genial nature he united wit; a jocose disposition, "for many a joke had he," and a rich and varied fund of anecdote, which made him a most agreeable companion. But never did he permit the society of his friends or the festive board to detain him from the couch of sickness, when he should be there. The faithful discharge of the duties of his profession was a part of his religion, and paramount to all other considerations.

His literary acquirements were of a high order. He possessed a knowledge of the Latin and Greek languages, which unlocked to him the rich stores of information contained in the classical writings of the Grecian and Roman fathers, and he read them in the languages in which they were originally conveyed. He read and spoke the German and French languages fluently, was familiar with most of the standard works in history, romance, and poetry, and sometimes wrote verses of no mean pretensions. Bunyan's Pilgrim's Progress, Shakspeare, Burton's Anatomy of Melancholy, and the Bible were favorite books, and he knew them almost by heart. This taste for literature served to keep his mental faculties in wholesome exercise, by relieving him from the tedium of professional studies, and in enabling him

"To respite his day-labor with repast."

Well has it been said, "that literature and science, far from injuring society, are the great instruments of ultimate refinement and exaltation, and should be universally cultivated. They lift the mind above ordinary life, give it respite from depressing cares, and awaken the consciousness of its efficacy with what is pure and noble. In their legitimate and highest efforts, they have the same tendency and aim with Christianity—that is, to *spiritualize* our nature. They carry the mind above and beyond the beaten, dusty, weary walks of ordinary life; they lift it into a purer element, and breathe into it a more profound and generous emotion. They reveal to us the loveliness of Nature, bring back the freshness of early feelings, revive the relish of simple pleasures, keep unquenched the enthusiasm which warmed the spring-time of our being, refine youthful love, strengthen our interest in human nature, expand our sympathies over all classes of society, knit us by new ties with universal being, and, through the brightness of their prophetic visions, help faith to lay hold on the future life."

Dr. Isaacs never made a public profession of religion. But if Christianity consists in a just conformity of our actions to the relations in which we stand to the Supreme Being and to our fellow-creatures, few persons were, or endeavored to be more diligent in the discharge of its essential duties. In his latter days, he expressed a cheerful confidence in the providence, grace, and promises of God; and when the love of life ceased to be an active principle, he rejoiced in a pious trust and humble hope of mercy at the Throne of Grace. He remarked to a medical friend, "I am not anxious to live, but I would like to do some good to my fellow-men. God's will be done! He is good, and more *wonderful* than all we have learned here!"

I have thus endeavored, gentlemen, in a plain, unvarnished, but imperfect manner, to present the lights and shades of the character of our departed friend; it needs no rhetorical embellishments. It is an observation of the younger Pliny, in his epistle to his friend Tacitus, that history ought never to magnify matters of fact, because worthy actions require nothing but the truth. This rule I promised myself to observe at the outset, that the hand of partiality might not color his excellencies with too much warmth. What failings he had may be forgiven for the sake of his virtues. "His defects were spots on the sun." I present as an example worthy of your imitation his love for the profession; his keen relish for its studies, and high estimate of its character; his habits of industry; his steadfastness of purpose; his kind affections, and the goodness of his heart. I know not that I could have placed before you a more encouraging example of what devotion to scientific pursuits, under the most adverse circumstances, is capable of accomplishing. Do you sit down in despair and tell me "that you are less gifted, and it is useless for you to exert yourselves in competition with such a man?" Had *John Hunter*, when a cabinet-maker; had *Charles Bell*, when a watchmaker; had *Dupuytren*, when an apothecary's assistant in the army; had *Velpeau*, when a working blacksmith; had our late lamented *Francis*, when a printer's boy, thus thought, think you they would have so distinguished themselves, not only in our own science, but in almost every department of literature and art? *Labor omnia vincit.* Science will claim from you more than a mere enjoyment of the treasures which belong to her temple; she will demand that you also shall bring gifts to her altars. Go forth, then, aiming at knowledge deep and varied; cherish sentiments of the largest and loftiest liberality, for the character of the age demands it. Take with you the blessings of those whose delightful duty it has been to instruct you. May your return to your homes—to those who are anxiously waiting to clasp you to their bosoms—be safe and joyous. May no domestic affliction intervene to mar the felicity of that reunion; and may your many privileges fill you with gratitude to your God, and stimulate your devotion to the thrice sacred cause of science.

FAREWELL!

Camp Disease. Observations in the Field, near Corinth, Mississippi.

By ALONZO J. PHELPS, Brigade-Surgeon U. S. Volunteers.

In anticipation of a severe battle before Corinth, general field hospitals were established in the rear of each *corps d'armée*, as grand depots for the wounded, where they might immediately receive the treatment necessary to their injuries, and obviate the necessity of a painful transportation to the river. But on the retreat of the enemy, and when orders were issued for our army to move on, these hospitals were filled with the sick from the various camp and division hospitals. No better opportunity than this could have been afforded for a study of the diseases prevalent in the army here. In this hospital alone, there were registered seventeen hundred patients. All of these cases presented the same type of disease, but variously expressed under the terms of Febris Typhoides, Diarrhœa, Dysentery, Scorbutus, and Debilitas.

Subsequent observation demonstrated the artificial character of this classification, and that the disease acquired its name from the most prominent symptoms present, and not in accordance with reliable pathological conditions. It could not easily have been otherwise, as all surgeons will testify who have found upon their register in the course of a few weeks the same person under treatment for dysentery, diarrhœa, and febris typhoides; the same attack acquiring a new name, in accordance with the development of new symptoms, or the absence of others. In fact, there has been so great a variety in the manifestation of these diseases, seldom ever running a regular course, but alternating one with the other, and exhibiting so many symptoms in common, that the nomenclature could not have been otherwise than very confused.

The case was termed *dysentery* or *diarrhœa*, in accordance with the presence or absence of tormina, tenesmus, and bloody evacuations. But there was seldom that amount of local pain and constitutional disturbance in cases exhibiting bloody evacuations to indicate the presence of active inflammation and ulcerations in the colon; and bloody dejections were frequently observed, unattended by tormina and tenesmus. When they occurred, they were more the result of a hæmorrhagic diathesis, than from any perceptible organic change. In all the autopsies made, the large intestine was singularly free from ulcerations; but the mucous membrane of the ileum invariably exhibited a softened condition, and was easily removed with the back of the scalpel. The same condition also existed in the colon occasionally. In no case was there discovered well-defined ulcerations; but in a few instances, the mucous coat was found absent in patches, and conveyed the impression that it had been merely abraded, rather than a result of an ulcerative process.

The *fever* present was decidedly of the adynamic type, and in the absence of a better term, was usually registered as Febris Typhoides. But this fever differed essentially from the true typhoid or enteric fever in several particulars. There was no tympanitis, no rose-colored eruption, and no dothin-enteritis. The visceral complications were trifling. In no case was there observed any disposition to a disorganization of the parenchymatous organs. There was a great tendency to serous effusions, especially in the pericardium. The brain appeared healthy. Death resulted from asthenia.

Parotid abscesses frequently were developed in the course of the fever. They usually appeared in the lowest stage; but when they appeared earlier in the fever, the system rapidly failed, and death ensued in a majority of the cases. When life was prolonged, the entire gland suppurated, leaving the whole parotid region cavernous.

Scorbutus was applied to those cases where more of the distinctive marks of scurvy were present, such as spongy gums, large and flabby tongue, feeble pulse, dusky complexion, and petechias. This disease very seldom developed itself in its worst forms.

Debilitas was a general term, and of very uncertain application. Sometimes it indicated convalescence; sometimes it was applied to that adynamic condition of the system that resulted from the continued operation of the depressing influences of the past severe winter and spring campaign. In these cases there is no fever, and but little if any diarrhœa, but simply a "weakness," attended with emaciation and loathing of the army ration. Occasionally they terminated very suddenly fatal, when no cause, *post-mortem*, could be discovered, save fibrinous coagula in the cavity of the heart, or, as Virchow has it—*thrombosis.*

These coagula were observed in nearly all the cases of sudden death, and in 33 per cent. of all the autopsies made. They were firm, and weighed from one and a half drachms to seven drachms. They were found more often in the right ventricle, generally in both; generally attached to the *corda tendineæ*, but sometimes entirely loose. The largest thrombus discovered was in the case of a patient who was admitted on the 28th day of May, 1862, with "Febris Typhoides." At the end of twelve days his symptoms were entirely relieved, and he bid fair for a speedy recovery. He remained in this condition without apparent disease, nourished and stimulated with care, until death came like a gentle sleep on the 22d day of June.

The heart was found in all cases pale and flabby, and the blood was very fluid.

The gall-bladder was usually found full of dark-colored bile. In several instances it was very much distended, and yet there did not exist any icteroid symptoms, nor any apparent deficiency of bile in the evacuations.

Several instances of intussusception were found, in one of which there were six invaginations observed, ranging from one inch to four inches in extent. The fæces had been passed regularly, and without any symptoms of obstruction.

The deductions from the foregoing observations are—that the causes of all these affections were essentially of a debilitating kind, and, in the main, may be enumerated as the long-continued exposure to cold and wet during the winter and spring, the hot sun during the day, and cold nights of the later months, excessive labor, loss of rest, and imperfect diet; that, possessing so many elements of similarity, they owed their variety to some accidental circumstance either in the constitution of the individual, or in the mode of application of the causes; and that no classification of them could be made having for its basis the presence or absence of morbid lesions that could be determined before death. It would seem that the combined operation of all the above causes generated a general morbid condition or dyscrasia which constituted the true disease, whilst the pathological conditions that resulted were not idiopathic, active, direct, but secondary effects, and indicated merely a process of degeneration. Accordingly, the *treatment* consisted *in rest and nutrition.* Stimulants were used freely. When the tongue was dry and fissured, chief reliance was reposed in the turpentine. Quinine was used as a tonic and sedative. In the cases complicated with parotid abscess, the following prescription seemed to act well:

℞.—Sulph. quin., - - - - ʒss.
Chlorate potash, - - . ʒi.
Tinc. ferri muriatici, - - fʒj.
Aq., - - - - - - ℥iv.
M.—Table-spoonful every four hours.

—*General Field Hospital for Army of the Ohio, July* 3*d*, 1862.

Epilepsy. (After the French of Herpin.) By Edward Sutton Smith, M.D. Article II. (Continued from page 31.)

Interval Between Attacks.—When one does not follow step by step the succession of epileptic attacks, they will be struck by their apparent irregularity; but if a certain lapse of time be considered as comprising a great number of acces, and this time is divided into equal periods; or, which amounts to the same thing, if you will take in fractions the daily minimum of the acces during irregular periods—for instance, during such and such treatment—it will be found that the return of the attacks is conformable, at least during a certain time, to a kind of regular law that was not at first suspected.

When we examine with attention a long series of the dates of acces, and keep account of the order by paroxysms when they occur, the intervention of certain accidental attacks, or the non-arrival of the ordinary return, we shall arrive at the conclusion that, though without the regularity of intermittent fevers, the crises of epilepsy are much less abnormal in their appearance than has been generally supposed, and that they are really regular, which distinguishes them from all other nervous crises.

In incurable cases, sooner or later the return of the acces is manifested by an acceleration, which is a bad sign. This gradual acceleration, generally slow, though sometimes rapid, is the indication of the course of the disease.

I have encountered all degrees of frequence; from more than one hundred a day, down to a single attack every four or five years. The most numerous category is that where patients have had from one to six attacks a week. In hospitals, in consequence of there being no infants, monthly attacks are usually those which are reported.

Acces return and follow two distinct courses: either by isolated acces, or by paroxysms; sometimes these two kinds combine, and at other times change from one to the other. The first course is three times as frequent as the latter.

Generally, the paroxysms come on about every month, lasting from one to three days, and are composed of from one to six acces.

Accidental or very intense paroxysms sometimes cause death.

Diurnal acces are sometimes as frequent as nocturnal, if we take for a day the time that elapses between the rising and retiring of the patient.

The lighter the crises are, the more apt they will be to appear during the day.

Nocturnal attacks are generally more intense, and indicate a higher degree of the malady.

In general, the interval between the attacks grows shorter as the disease advances.

Nature of Acces—Section First—Type of an Acces of Epilepsy.—An individual, apparently in perfect health, without any premonition, gives a cry, and suddenly falls, deprived of intelligence. At once tonic convulsions commence at some point of the locomotive system, and ultimately extend to all the voluntary muscles. The contraction, in proportion as it is more energetic in the muscles of one side of the body than in those of the other—in the extensors than in the flexors, in the elevators than in the depressors, in the constrictors than in the dilators—induces such a variety in the fixed attitude of the members of the trunk, head, or the expression of the countenance. From this immobility of the muscles and occlusion of the glottis results, as has been well shown by Van Swieten* and M. Beau, the suspension of respiration, then all the signs of asphyxia; we will add, as a natural consequence, the accumulation of saliva in the mouth, arising from the compression of the salivary glands.

This period is called *tetanic.*

After this first division, to the tonic phenomena are added, first, partial, then general, clonic convulsions; which, according to their predominance in such or such muscles, or such and such regions, produce the most irregular movements and hideous expressions of the face.

Respiration, incompletely re-established by these movements, is performed with considerable noise; you hear the noise produced by the passage of the air through the mucus or saliva, which soon appears upon the lips in the shape of foam. This foam is sometimes reddened by the blood that arises from the biting of the tongue. The urine passes involuntarily, moistening the garments of the patient.

This is the second phase, that of the *shocks.*

The *râle* and the rigidity evidently persist after the clonic convulsions, then diminish, and finally cease more or less rapidly during the third period. This latter is marked by muscular relaxation, coma, and stertorous breathing. It is the perfect image of that condition which is known by the name of *cerebral commotion.* The loss of intelligence continues; the pupils are greatly dilated; respiration is low, profound and stertorous; the face is less colored; the pulse, from having been rapid during the preceding periods, now gradually lessens.

This is the snoring period, or *comatose state.*

The patient wakes up as if from a prolonged sleep, astonished, exhausted, terribly fatigued, and with a pain in the head. Has no recollection whatever of the painful scene that has just passed. Can articulate a few words, but soon falls into a sleep that is really reparative.

This fourth period is that of *return to consciousness.*

The duration of the first period is very short—about a quarter of a minute; each of the succeeding ones is about four times as long as that which immediately precedes it.

Such is the type of a complete attack of epilepsy; such is the result, according to my idea, of the numerous descriptions given by authors of the comparison of a number of facts; and finally, of my own observation. But this type, like all others, is in reality but a generalization, and we must not expect to find it exactly reproduced in the majority of epileptic cases. The different degrees of intensity, and the greater or less duration of the acces, present numerous varieties; more numerous than any physician would suppose, who had not specially studied this disease.

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*Commentaria in H. Boerhaavii Aphorismos, Parisiis, 1758, tome III., p. 398.

The study of all these varieties has never been methodically pursued, and this subject, alone all-important from a diagnostic point of view, we shall undertake, though without the pretension of calling it complete, for, to accomplish that, one should live in an epileptic hospital.

Section Second—Prodromes.—The prodrômes are divided into *remote* and *near;* in this latter category are included those sensorial or convulsive manifestations that from their nature are intimately connected with an attack properly so called.

We have encountered prodromes only in nine individuals out of thirty-five; that is, in scarcely a quarter of the cases. Those observed were of a very variable nature.

Change of character: irritability, turbulence, violence, sadness, agitation, struggle against the attack.

Vertigoes.

Headache, congestion of the head, somnolence, general fatigue.

Nervous trembling.

Skin burning; sensation of cold; chills; sometimes paleness.

Nausea.

Diarrhœa; colic, without evacuations.

But these prodromes as signs are far from having that value that has been attributed to them. If the patient is watched a long time, and the precursory signs noted with care, it will be found that the prodromes are often wanting, and that even their appearance is not always followed by an attack.

Section Third—The Commencement of an Attack, and the Aura Epileptica.—The cases in which we can follow an attack of epilepsy from its origin are very rare, particularly in private practice. Even when an acces has taken place in the presence of a physician (unless he has been forewarned) who is both attentive and placed in favorable circumstances, it is difficult to observe from its very commencement. But, happily, there are cases where the phenomena do not follow each other so rapidly; where it is possible to study the initial steps of the attack from the information furnished either by the patient or his friends.

The first attack that took place in Observation No. 2 commenced with a cramp or contraction with flexion of the two last fingers of the left hand; she then gave utterance to two or three screams, while her hand closed, her forearm bent, and her whole arm was raised in such a manner as to carry the hand towards the shoulder; the succeeding contractions were very painful; the head turned around; it seemed to the patient that the same sensation was about to pervade the whole body; consciousness was lost; and finally the young girl fell upon the floor, and had a well-marked attack. Same state of things took place in the next acces. All these details are authentic, having been given me by the girl herself, without my directing her by questions; her friends, intelligent persons, confirmed the facts.

Observation No. 9—*(Third Series.)*—Miss W., of Brooklyn. Disease first manifested itself in 1859; interval between attacks about fourteen days; always commence with cramps in the left foot, which gradually extend to the trunk, till the whole body is convulsed; has had as many as eight attacks in twelve hours. Came under treatment the 16th of March, 1862; has never had an attack since.

We shall find a similar case in observation No. 38. Painful cramp in the great-toe of one foot, which produced groans, and sometimes screams; the toes had a tending to turn up; the painful sensation, accompanied with a sense of fullness, gradually gained the limb, the thigh, the stomach, the chest, passed into the fingers of the hand; some of them turned, remounted to the shoulder, the side of the neck, the ears, the face, and terminated at the top of the head; then the patient lost her sight, the head turned upon its axis, or backward; consciousness vanished; the members straightened out and stiffened; the close of the attack was quite short, and marked by some shocks of the head.

As regards the fall, the duration of the *début* always allowed this second young lady to sit down and sustain herself, otherwise she would certainly have fallen. Observe that, in this last case, the cramp sometimes commenced in the leg, the thigh, the fingers, &c., and sometimes passed from one side to the other, but always advancing from below upward on the same side. The details of this second case were as correct as those of the first. Having been myself a witness to one of these cases, I can bear witness to their minute exactness.

I shall here cite Bonet*—interesting from the double point of view of the influence of the ligature, and the preservation of intelligence during the attacks.

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* *Sepulchrum*, folio 1700, t. I., sec. 12.

"Many sympathetic cases of epilepsy have been cited, dating their origin from many different parts of the body, but none have ever been published where the affection commenced in the inguinal region. I observed a case of this kind in 1656, in the person of M. Rosselet, of Neufchatel, in Switzerland. He was a man fifty years of age, red hair, a *bon vivant,* and somewhat addicted to the society of the fair sex during his youth, as he himself said. At intervals he felt in the left groin a swelling like a small bubo; from thence a crawling sensation passed slowly down the thigh to the very sole of the foot. When it had arrived there, a kind of wind or vapor (*vapor quidam quæris aura*) mounted rapidly from this point to the brain, though it only reached the left side, as could be seen from the fact that the convulsions only affected the left side of the body and face, which was deformed by frequent grimaces. The patient lost neither speech nor consciousness, though this latter was altered, the vapor also reaching the nerves of the tongue. He said hesitatingly to me in the midst of a paroxysm, '*See, see! how this terrible evil torments me!*' He experienced, at the same time, shocks in the arms and legs; this condition of things lasted about five minutes." The patient, to whom Bonet proposed the application of the actual cautery at the point of departure and throughout the length of the course of *the aura,* refused in the most absolute manner. "He consented, however, to employ a ligature above or below the knee, so as to intercept the course of *the aura.* The moment that this latter commenced, and the patient felt the itching and tumefaction of the groin, he drew tightly around his leg a garter that always hung on his bed. He always succeeded in arresting the paroxysm, and gave up all other remedies. One evening, while dining with his wife and children, who had pushed the table against his bed, he felt the vapor coming on; the obstacles that prevented his taking his garter could not be removed with sufficient celerity; the vapor became all the more violent from having been so long compressed, and mounted with such fury that this eminent man perished in the paroxysm."

The following is the opinion of Esquirol on the subject: "In a great number of cases, epileptics, before losing their consciousness, feel a convulsive movement, a kind of pain; they experience a chill, a vapor (aura epileptica) on the head, the face, one of the arms, the hands, the thighs, the legs, the toes; these different feelings are propagated the whole length of the limbs, towards the head, and when this *vapor* arrives at the head the patient loses consciousness;

then the convulsions are sometimes general, sometimes partial, and sometimes limited to the limb that was primarily affected."

As we advance in the seventeenth and eighteenth centuries, we find the cold vapor less and less frequently mentioned; it is replaced by spasms, cramps, convulsions and shocks; and finally, in our time, criticism, the child of doubt, has denied the phenomena altogether.

From a close analysis of all the most complete and recent facts, it seems legitimate to conclude that the prodrome described under the name of *aura epileptica* is nothing more than the first convulsive manifestation of the attack, taking place in a part of the system more or less removed from the brain.

To give a definite *résumé* of the subject—

The functional alteration of the nervous centres, which constitutes an attack of epilepsy, usually invades those organs from the superior part of the cerebro-spinal axis to its inferior portion; but it may also commence at various points throughout the length of this system, as well as in its inferior portion. This last form is the severest of all.

I am inclined to think that the cry, which is the second phenomenon at the commencement of an attack, *is an expression both of surprise and of the pain caused by the convulsion. The cry is met with in about half of those epileptics that have complete attacks, but it is only constant and reliable in about a quarter of the cases. In the case of children it is often replaced by tears.*

This symptom is never connected with vertigoes or incomplete acces. Generally speaking, the most violent attacks are those that are preceded by the cry or scream.

The fall is the third symptom of an attack; it is much more frequent than the cry; without, however, being constant, and may be so violent as to cause death.

When the period of cramp or partial initial convulsions is prolonged, the acces is more generally incomplete, or very brief.

One strong scream, on the contrary, indicates the commencement of a violent attack.

The more sudden the fall, generally the shorter the acces.

In a word, *the longer the debut, the less violent the crisis; the more sudden, the more intense the acces.*

No. 10 Union Square, New York.

The Characteristics of some of the Poisonous Alkaloids, and the Methods for Detecting the Same. By USLAR & ERDMANN. (Translated for the MONTHLY.)

The difficulties which attend a search for an alkaloid in medico-legal investigations, associated with other organic substances, are well known. The following process commends itself by its simplicity as well as its general applicability. It is based upon the following facts: 1st. The free vegetable bases are soluble in amylic alcohol, especially when cold; 2d. Pure water, or water that has been made alkaline, will not remove these bases from such solutions; 3d. But they may be separated completely if they have first been converted into salts by chlorhydric acid, since the organic chlorides, which are then formed, are but slightly soluble in amylic alcohol.

The process is as follows: The suspected matter is reduced to the consistency of broth with water, slightly acidulated with chlorhydric acid, then allowed to digest for two hours at a temperature of from 60° to 80° C.; filtered through moistened linen, the residuum exhausted with warm water, also acidulated, and after the liquids are mixed a slight excess of ammonia is added; concentration is accomplished at an open fire, and finally it is dried in a water-bath. After having exhausted the residuum with warm amylic alcohol, it is then speedily filtered through paper, which has previously been moistened with the same amylic alcohol.

The product of the filtration is ordinarily mixed with fatty or coloring matters, which may be removed by agitating the liquid rapidly with water, nearly at the boiling point, to which a small quantity of chlorhydric acid has been added: the amylic alcohol gives up the alkaloids, whilst it retains the most of the fatty or coloring matters. The alcohol is then removed by means of a pipette, supplied with a caoutchouc cover;* the warm aqueous solution is then agitated with a fresh quantity of amylic alcohol, and thus, without much trouble, all the foreign substances are completely removed, so as to leave the acid solution, perfectly colorless, containing the alkaloid in the form of a chlorhydrate. This is then slightly concentrated, ammonia is added in slight excess, and amylic alcohol is added again, which, with the aid of agitation, takes up the alkaloid. As soon as the two layers of liquid are completely separated, the upper (containing the alcohol and the alkaloid) is withdrawn, and the lower layer is treated with a fresh supply of warm amylic alcohol. The alcoholic solutions being mixed, are then evaporated in a water-bath, when the residuum is ordinarily found to be the pure alkaloid. Should it be colored, the operations already described must be repeated; that is, the residuum must be dissolved in chlorhydric acid, agitated with the alcohol; this removed with the pipette, then supersaturation with ammonia resorted to, amylic alcohol again employed, and evaporation in the water-bath. It is a very rare thing to have the alkaloid in any other condition but a state of complete purity from this process; should it not be so, the process is again repeated. (An objection to the process is suggested by Nickles, in the case of nicotine and coniine, which could hardly escape decomposition on account of exposure to the air and to the action of ammonia, at the temperature of the water-bath.)

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* This form of pipette is recommended in order to avoid the inhalation of the vapors of the amylic alcohol.

The authors have verified their process by various experiments. Some chlorhydrate of morphia being mixed with panada or putrescent meat—the whole being exposed to the action of the sun for fifteen days—was detected by the peculiar reaction it affords with the sesquichloride of iron, although the authors experimented with less than a decigramme of the chlorhydrate, (the quantity employed varied from 0.054 to 0.005 gramme,) mixed with from one to two kilogrammes of organic matter. They have also recovered one drop of nicotine and two drops of coniine mixed with 750 grammes of panada. In the same way they have experimented with 9 milligrammes of strychnia and 8 milligrammes of narcotine; and with a mixture of 0.012 grmm. of morphia, and 0.013 grmm. of narcotine mixed with pea soup and meat, and exposed for four days to putrefaction. After the alkaloids were obtained, they were separated from each other by the use of ether.

CHARACTERISTIC REACTIONS OF SOME OF THE ALKALOIDS.

1st. *Sulphuric Acid containing a very small quantity of Nitric Acid.*

This reagent is prepared by taking six drops of nitric acid (sp. gr. 1.25) and 100 cubic centilitres of distilled water. Ten drops of this mixture are added to 20 grammes of pure concentrated sulphuric acid. From 8 to 20 drops of this reagent are employed, according to the quantity of the alkaloid, which may vary from one to several milligrammes. At the end of about half an hour the following results will be remarked:

	MORPHIA.	NARCOTINA.	STRYCHNIA.	BRUCIA.	VERATRIA.
With the acid reagent......	Violet red.	Onion red.	No change.	Red and then yellow.	Yellow and then brick red.
Two drops of water being added	Violet red.	"	"	Yellow.	Red and then cherry red.
Three drops of water	Intense violet red, especially when slightly heated.				

2d. Sulphuric Acid with the addition of Peroxide of Manganese.

The substance to be examined is moistened with from 8 to 20 drops of sulphuric acid, and then a few pieces of the peroxide of manganese (free from powder) of the size of a pea are added. At the end of an hour the following reactions are perceived:

Morphia	furnishes a	*mahogany-brown solution.*
Narcotina	"	*red solution.*
Strychnia	"	*purplish violet, and then a dark onion-skin red.*
Brucia	"	*red, and then a bright yellow.*
Veratria	"	*dirty cherry red.*

If, at the end of an hour, these solutions are diluted with from four to six times their volume of water, added so as to avoid all increase of temperature, and weak ammonia be carefully added so as to avoid excess of the same, we will observe the following alteration in the color of the solutions:

That of morphia will become a *dirty yellow.*

That of narcotine will remain *red.*

That of strychnia will become a *purplish violet.*

That of brucia will become a *golden yellow.*

That of veratria will become a *brown, turning to a yellow* when ammonia is added.

On saturating these solutions slightly with ammonia, the following will be remarked:

The morphia forms a *brown* solution, afterwards precipitating.

The narcotina instantly furnishes a *brown* precipitate.

The strychnia forms a *yellow* or *greenish yellow* solution.

The brucia forms a *yellowish.*

The veratria forms an instantaneous *greenish brown* precipitate.

If these solutions be again acidulated with sulphuric acid, the primitive colors are reproduced.

From the *ensemble* of these reactions a systematic plan of detecting these alkaloids qualitatively is thus obtained:

A. The substance is moistened with from 4 to 6 drops of pure concentrated sulphuric acid.

1. If there be *no reaction*, *brucia*, *narcotina*, and *veratria* are absent.

2. If a *rose* color become *yellow* afterwards, *brucia* is present.

3. If a permanent yellow is immediately formed, *narcotina* is present.

4. If a *yellow*, gradually becoming a *red*, *veratria*.

B. Whether any reaction or not has been produced, the liquid resulting from A is treated with from 8 to 20 drops of the sulphuric acid containing nitric acid, (prepared as has been described,) and from 2 to 3 drops of water; at the end of about half an hour the following may be remarked:

If *morphia* be present, there is a violet red.
If *narcotina* be present, there is an onion red.
If strychnia be present, there is no change of color.
If brucia be present, there is a yellow.
If veratria be present, there is a cherry red.

C. Whether the process B has produced a change of color or not, from 4 to 6 fragments of the peroxide of manganese (free from powder) of the size of a pea are added, and at the end of an hour will be noticed:

A. *mahogany brown* if *morphia* be present.
A more or less reddish yellow if *narcotina* be present.
A dark onion red if *strychnia* be present.
A gamboge yellow if *brucia* be present.
A dirty cherry red if *veratria* be present.

D. The separate colored liquids arising from each substance, and obtained by these three processes, being then mixed in the cold with four times their volume of water and nearly neutralized by the careful addition of ammonia, if we observe,

1. A dirty yellow color, becoming a brownish red by supersaturation with ammonia without forming an immediate precipitate, *morphia* is present;

2. A red color becoming a dark brown by supersaturation, indicates *narcotina;*

3. A *purplish violet* solution which is converted into a yellow or greenish yellow from excess of ammonia, *strychnia* is indicated;

4. A golden yellow solution, not altered under the influence of excess of ammonia, brucia is indicated;

5. A *brownish* solution becoming yellow under the influence of am-

monia, an excess of which precipitates a *clear brownish-green* precipitate, shows veratria.

Some of these colors may be rendered permanent, or at least to last for some little time; and hence the colors of the first series are pretty well preserved in the presence of excess of pure concentrated sulphuric acid. The purple reaction, produced in strychnia at the instant the point of neutralization has been reached, will be preserved for a day, at least, in the presence of alcohol. L. H. S.

Malt as a Therapeutic Agent. (From the French of Dr. CHAS. FRÉMY.)

The author occupies the first portion of his paper with a description of the method of preparing malt, and the different forms in which he has employed it therapeutically. The powder of malt and the extract he has most frequently employed in his experiments, during a period of six months; and the therapeutic effects are of sufficient interest to present the remainder of his paper to the readers of the MONTHLY.

In sixty-four cases of phthisis, where the preparations of malt were employed constantly, he regrets that he saw none cured absolutely by the use of this agent. Five of them, however, left the hospital very much better, calling themselves cured, but auscultation satisfied him that this statement could not be accepted, although a notable amelioration of symptoms certainly had been produced. The condition of the other cases had not changed; the phenomena of auscultation remained the same, and the disease did not appear even arrested in its progress, although, as a general thing, the common accidental symptoms which accompany the progress of pulmonary tuberculization (such as night-sweats, diarrhœa, &c., &c.,) seemed in every case to have been advantageously modified.

But although, in *confirmed* phthisis, with tuberculous excavation of the lungs, the preparations of malt only afforded either no results, or such as were doubtful, still it was different in cases of bronchitis, *incipient* phthisis, and pulmonary catarrh, where these preparations were employed with decided advantage.

A young woman, twenty-five years old, who had suffered from a cough for several years, was considerably emaciated, and showed at the apex of both lungs clear signs of tuberculous induration, employed malt beer and powdered malt for two months. Cod-liver oil and other methods of treatment had produced no effect on the progress of the disease up to the time when she began the use of the malt. Under its influence her health improved. She ceased coughing, respiration became more full, the respiratory murmur equal and soft, appetite excellent, strength returned, and her *embonpoint* was quite that of health.

In cases of simple bronchitis, without fever, with hoarseness, malt, in many cases, aborts the diseases. In cases of chronic catarrh of the lungs, the author has seen the preparations of malt succeed marvelously well. These preparations answer admirably, especially towards the end of bronchial attacks of a protracted character, which sometimes terminate in the production of grave symptoms of dyspepsia, especially with the old: the extract of malt, in these cases, relieves the digestive troubles, besides curing the bronchitis. In simple dyspepsias malt beer is successfully administered, and succeeds very well when the appetite does not return, and the saburral complication has completely disappeared.

In Germany it is employed with the greatest advantage in cases of choroanæmia, which occur often in nurses.

It is difficult to specify the *modus operandi* of these preparations, which have been, down to the present time, employed somewhat empirically. The reconstructive and reparative power of malt is undoubted. The powder is a true analeptic, and the bitter principle, due to the presence of lupulin, should give it great power in reestablishing the functions of the stomach in different forms of dyspepsia, of which this viscus is the seat. The analeptic and reconstructive properties are due to the presence of a considerable amount of diastase. This is produced in the germination of the barley. The action of this substance is such that, according to the experiments of Bidault, if we macerate the powder of malt along with water at 75°, a solution is obtained containing glucose holding *gluten in solution.* In consequence of the presence of the glucose, this liquid is slightly laxative and emollient; and because of the soluble gluten, it is tonic and invigorating. The gluten is a soluble article of food, and in a condition easily assimilated by our organs, without fatiguing them.

The extract of malt is preferred in the treatment of incipient laryngo-bronchitis, accompanied with hoarseness.

The author has met numerous persons affected with this kind of tracheitis, where the disease was cut short in the space of forty-eight hours. In other cases, he has obtained rapid cures of chronic bronchitis, with or without catarrhal complications. L. H. S.

Tablets of Chlorate of Potassa. (DETHAN'S Formula.)

These tablets are intended to be used in scorbutic and ulcerated membranous affections, accompanied with fœtid breath. The following formula is furnished by the author to the editor of the *Journal de Chimie Médicale:*

Chlorate of potassa, 20 parts.
Balsam of tolu, 5 "
Alcohol, q. s. to dissolve these.
Pulverized sugar, 75 parts.
Mucilage of gum tragacanth, q. s.

A homogenous paste is made, which is then divided into pastilles of 1 gramme weight. Each pastille contains 0.20 centigramme of the chlorate, and 0.05 centigramme of tolu. Taken in quantities of from 12 to 20 pastilles a day, this preparation acts most beneficially, especially on account of the direct action it exerts on the seat of the disease. The balsamic properties of the tolu increase the salutary action of the chlorate of potassa; and the tolu also, by its agreeable odor, contributes to modify the fœtidity of the breath. L. H. S.

Translations from the German. By C. A. HARTMANN, M.D., of Cleveland, Ohio.

VIII. *On Mental Diseases combined with Paralysis.* By Dr. JOFFE, of Vienna.

The disposition to paralytic dementia manifests itself psychically by great receptibility with little reaction in individuals of great anxiety and easily perplexed; somatically, by habitual congestions to the head. Occasional causes are all conditions operating in the same direction; sexual excess, immoderate use of spirituous liquors, continued mental exertions, with loss of sleep, depressing influences, grief. Individuals between 30–40 years of age are most exposed to such affections; males much more than females.

There are two periods in the development of the disease: hyperæmic irritation and motory paralysis; the former not unfrequently concealed by the absence of all symptoms. A better division is that into mental disturbance and morbid innervation. The fundamental conditions of the mental faculties are thoroughly disturbed from the beginning. The normal reproduction and association of ideas being obstructed, the most common occurrences are not comprehended. The patients complain of being starved before they have finished a sumptuous repast, mistake noon for midnight, &c. This intellectual desolation is a characteristic symptom of progressive paralysis, under whatever form of mental disease (mania, raving, melancholia, senseless loquacity, apathy,) it may appear; but the special symptoms are greatly varied by the frequent paroxysms of excitement, and the changing ideas and hallucinations. With the progressing disorganization of the brain, they are more and more superseded by the phenomena of nervous lesion. Hallucinations of sight and hearing are frequent; taste and smelling usually altered so that the most nauseous things do no affect them. Excessive sensibility of the skin occurs occasionally; in most cases the sense of feeling is normal; at a later period, weakened.

Convulsions are frequently among the premonitory symptoms, and apoplectic fits among those introducing the disease. In its further course, difficult moving of the lips and trembling of the tongue come on. Speech slow, drawling, stammering, stuttering. Sooner or later, stiffness of one extremity, hemiplegia, and finally paraplegia. Twitchings of one or several muscles appear now frequently, and are apt to run into general or unilateral convulsions, with loss of consciousness, continuing for hours and days, and finally ceasing after several intermissions, or ending in death with paralysis of the bladder and pharynx.

At an early period, the iris is no longer affected by light, nor the most sensible parts of the body by mechanical irritation. The influence of electricity corresponds to the preservation of the muscular tissue. The vegetative functions remain intact for a longer time; at last nutrition becomes disturbed, and emaciation follows; frequently with atrophy of all the parenchymatous organs. Pneumonia and decubitus are almost constant complications.

Usually the progressive paralysis is a primary, rarely a secondary disease, with exacerbations and remissions of the symptoms; mostly chronic, but occasionally acute in character. Duration from six weeks to six or seven years.

The prognosis is unfavorable. By far the most cases terminate in death. Recovery is impossible, except where the disease is of recent origin, not announced by trouble in the peripheric nerves or apoplectic symptoms, and where the occasional causes have not been operating too long. During the first stage of the disease its progress may be stopped at any time, with more or less preservation of the mental faculties.

The principal therapeutical indication is to prevent and subdue the arterial and nervous excitement. The remedies for that purpose are known. Venesection and douche are injurious under all circumstances.

The disease consists materially in an increase of the areolar tissue, with destruction, and colloid as well as amyloid degeneration of the nerve-tubes and cerebral substance. After death we find the brain atrophied, of a dirty white color, more or less softened, especially in its inferior layers. Bones of the skull thick and compact. On the inner surface of the dura mater, frequently pseudo-membranous coagulations, with or without extravasates. Between the layers of the arachnoidea, accumulation of blood and serum in varying quantities. The inner membranes of the brain usually infiltrated with serum, and the pia mater adherent to the cortical substance. Ventricles often considerably dilated, and containing serum. After a protracted course of the disease, the spinal marrow appears likewise atrophied beneath exuberant areolar tissue. Prof. Wedl has recently shown that the capillaries of the brain are obliterated in consequence of the tissue hypertrophying around them. This necessarily produces obstruction of the circulation, and nervous irritation; a bad complication of the cerebral symptoms.—(*Zeitschr. d. Gesellsch. d. Aerzte zu Wien.*)

IX. *Anatomical Effects of Tight Lacing.* By Prof. ENGEL, of Vienna.

Chest greatly elongated; anterior extremities of the tenth and eleventh ribs approaching or touching the crest of the ilium; intercostal spaces wide. Ribs forming a very acute angle towards the lower part of the sternum, or running parallel anteriorly, so as to form a long, narrow furrow over the pit of the stomach. Lower ribs occasionally bent outward in their anterior segments.

Abdomen diminished in size; presenting a regular round protrusion from the navel downward. Its integuments very thin and relaxed, often indicating the windings of the smaller intestines.

Perineum convex; the region of the rectum not unfrequently forming a conical eminence.

Diaphragm very low, with its highest point hardly reaching the sixth rib; frequently laid in folds. Instead of being arched, it is very flat, declining posteriorly; always relaxed, particularly on the right side.

Heart moved downward to the anterior extremity of the seventh rib; aorta elongated.

Liver pressed downward, elongated in shape, approaching the crest of the ilium, or reaching below it. Fundus of the gall-bladder touching the anterior superior spine of the same bone, or near the navel.

A transverse furrow, of variable depth, running over the anterior surface of the right lobe; sometimes several inches in width. Coats in this furrow thickened, yellow, not transparent; the substance beneath, pale, anæmic; sometimes very thin, and exhibiting the remains of obliterated vessels. Above that furrow the right lobe appears like a broad rounded margin; below it is unusually thick and round; its posterior surface concave, the anterior one flat. The region of the round ligament, not so easily yielding, produces a deep notch in the lower margin. The external portion of the right lobe atrophies, or turns backward and inward, forming a deep, perpendicular furrow on the inferior surface of the organ. The dividing line between the two lobes moving towards the stomach, the round ligament descends in a straight line.

Transverse colon on the right side, pressed downward by the liver, pushes other portions of the intestines along, and may rest in the right iliac fossa, running in an arched form, a little beyond the left iliac crest. Ascending colon lower than usual; running not unfrequently into the transverse portion in front of the right psoas muscle, where also the cœcum takes its position. All the larger intestines remain forever contracted.

Stomach pressed to the left side of the abdomen, running perpendicularly, with a rectangular curve about an inch from the pylorus, which is usually much below its usual place—in front of the spinal column. The whole stomach always considerably contracted; frequently with a transverse division.

Spleen constantly very small; its situation dependent on the altered position of diaphragm and stomach.

Duodenum displaced inferiorly and inwardly, sometimes to the front of the spinal column; its horizontal portion very short and curved.

Pancreas frequently atrophied in consequence of pressure by the liver; always lying nearly perpendicularly along the anterior surface of the spinal column.

Small intestines in the lower part of the abdomen and pelvis, usually extended by gas; some of them ascending behind the transverse colon, the stomach, and even the pancreas.

Bladder flattened, relaxed; not very contractible.

Womb flat, pressed on to the rectum; frequently adherent to it, with dilatation of the perineum. Where this adhesion does not take place, prolapsus of the womb is inevitable.

The right kidney changes its situation in accordance with the liver, moving towards the vertebral column and pelvis, so as to reach, with its lower portion, the iliac fossa, and run in an oblique direction from the sacrum towards the crest of the ilium. The left kidney seldom comes down to the part last named.

The altered situations of the blood-vessels present nothing of particular importance.—(*Wiener Medizinische Wochenschr.*)

Transactions of the Medical Society of the County of Kings.

REGULAR MEETING, DECEMBER, 1861.

Case of Hydrocephalus complicating Labor. Dr. ENOS.

Mrs. F., æt. 44 years, was taken in labor Nov. 13th, with her eighth child. The waters were discharged early in the labor, and though the pains were frequent and agonizing, yet not expulsive; the os was but little dilated for 48 hours; vomiting frequent. The child felt to her like an oppressive weight. The bones of the head were felt to be widely separated; but the precise position was not ascertained.

At the end of the second day the pains became more severe, and the os more dilated. The head did not engage in the superior strait. The occiput was now *supposed* to be towards the left acetabulum. The parietal bones were parted far asunder; the widely separated edges felt like the divergent crests of the iliac bones. This impression was so strong that I felt again and again to find the projecting spines of the sacrum in the intermediate space; but all here was soft and fluctuating. By introducing two fingers far in towards the right sacro-iliac symphysis, I slipped them on the os frontis, and felt the nose and one eye. Hence, I inferred that this was a case of intra-uterine hydrocephalus; and as severe and continued pains, with a fully dilated os, did not cause the head to enter the superior strait, I concluded operative interference was necessary. Dr. Mitchell saw the case in consultation, and concurred in the diagnosis, and also in the propriety of perforation. The operation was performed, when from one to two pints of clear fluid escaped. The head descended with the next pain, and labor was soon completed. The child was a female, large and normal, except the head. There was a momentary, slight and inaudible attempt at respiration.

The mother had been feeble during the pregnancy, and had suffered previously from two attacks of puerperal peritonitis. The head, when stuffed with curled hair, has all its diameters more than *one* inch above the normal standard, and these are much less than when the head was distended with fluid. The mother had a slow recovery, with much purulent discharge from the vagina.

REGULAR MEETING, FEBRUARY, 1862.

Dr. J. T. Conkling reported a case of sudden death from fatty degeneration of the heart and occlusion of the coronary arteries.

Mr. A., aged 63, had been, until within a few years, an active merchant. Without any acute disease, his health had been declining. He was unable to walk rapidly; found it difficult to go up stairs, and was unable to lie upon the left side. He consulted me professionally about a year ago on account of debility, and was advised to adopt some mild means to obviate constipation, and to take tonics. He declined at that time, as he always did subsequently, a careful examination of his chest. I could only detect a weakened action of the heart.

About six months since I was called in haste to see him. The messenger said he had fainted. I found him entirely unconscious; his skin cool; pulse weak; respiration normal. He rallied after the administration of stimulants; was confined to his bed for a couple of days; to his house for a week, when he again resumed his usual mode of life, but never regained the strength he had before the attack. The slightest excess in his exercise would bring on attacks of dyspnœa, but he was at all times free from pain.

On the fifth of the present month he had been, during the day, twice to New York. On returning, about five, P. M., he had great difficulty in getting home, on account, he said, of "shortness of breath." He took a seat by the fire, complained of slight nausea, but no pain; was about to swallow some water, when his head fell back and he ceased to breathe.

Post-mortem, sixteen hours after death:

The body was rounded and symmetrical, by deposit of an abundance of adipose tissue beneath the integument. On opening the thorax, the lungs were found healthy, while the heart was enlarged, and surrounded by a large quantity of fat. The pericardium contained — ounces of serum. The aortic valves were slightly deficient, and under the serous coat covering them, and lining the aorta, were collections of atheroma containing calcareous matter, so that to the touch they were hard and gritty. The mitral valves were perfect. The coronary arteries were occluded with atheroma and calcified matter. The cavities were enlarged. The walls of the left ventricle thickened and softened; those of the right atrophied. The weight of the heart was eighteen ounces.

Under the microscope, the fibres from the walls of the left ventricle retained the most of their stria; yet there were many places in the field where free fat-cells were abundant, while similar cells were found between the fibrilla, and at different points the sarcolemma was crowded with minute oil-granules, frequently breaking entirely the outline of the fibre. The columnæ carneæ were firm, and exhibited no trace of fat under the glass.

This is an additional case to prove that the calcification of the coronary arteries is not, necessarily, connected with angina pectoris. The entire absence of pain was a marked feature in the case.

The attack, some months previous to death, in which there was sudden loss of consciousness, as in apoplexy, and recovery without paralysis, is an interesting fact in the history. Dr. Cheyne first associated such seizures with fatty degeneration of the heart, and Drs. Adams, Law, and Stokes have reported similar cases. In one of the cases detailed by Stokes, there was calcification of the cerebral arteries. Pathologists now regard such attacks as connected in some way with cardiac disease, but not dependent upon it.

REGULAR MEETING, MARCH, 1862.

Dr. JOHN G. JOHNSON related a case in which a child of 3 years of age had passed three calculi in nine months' time.

Thos. D., 2½ years of age, came under my observation about one year ago, suffering from retention of urine. The child is a strong, fleshy child, and mother states that she has been in the habit of feeding the child with meat three times a day. They have always lived in Amity Street since the birth of the child. Percussion over the bladder showed that it was distended, rising far above the pubis; introducing a silver probe, which had been curved to the shape of the urethra, a large calculus was found distending the urethra, at the junction of the spongy and membranous portion of the urethra; small, narrow-bladed forceps were introduced, and an attempt was made to extract the calculus by the use of the forceps. This was unsuccessful, both in my hands and those of the staff present. An attempt was made to press the calculus forward with the finger in the rectum. This could not be done. The child was placed under the influence of chloroform, and another attempt to remove was made.

Failing in our endeavors at extraction, after the most thorough trial and dilatation of the anterior portion of the urethra, we attempted, by means of a large silver catheter, to force the calculus back into the bladder; but this could not be done. The calculus was then cut down upon, and its removal effected through the opening. The wound healed readily. The calculus was of an irregular, oval shape, rough on the sides and smooth at the ends, and so large that it would not pass through the guage of a No. 11 Tiemann's bougie. It was somewhat strange that so large a calculus could have worked its way into the child's urethra. As it was, it completely obstructed the passage of the urine, not allowing the ordinary stillicidium, which occurs when there is an obstruction of the urethra.

About two months after this, the mother found the child complaining again of pain in the penis, and gave him some flaxseed tea; shortly after, in an attempt to pass water, a calculus of considerable size was forced into the urinal. Some six months after this, the mother again brought me the child with retention of urine, though not complete at this time. On examination, a calculus was found lodged nearly in the same position as the first one. After dilating the urethra as far as possible by bougies, a small pair of narrow-bladed forceps was introduced, and the calculus removed.

Whether the unnaturally stimulating diet of meat had anything to do with the successive formation of the calculi, I do not pretend to determine; but it is an interesting query as to the cause of so many calculi being formed in so short a time in so young a child.

Cancer of both Mammæ and the Axillary Glands of each Side.

Dr. JOHN G. JOHNSON reported a case where the patient had scirrhus, or hard cancer, involving *both* mammæ and the axillary glands of each side. It was an unusual case in his own experience, and in that of the surgeons who had seen it. Prof. Frank H. Hamilton, whose surgical observations have been quite extended, regarded it as an unique case. The ordinary writers upon surgery make no mention of more than one mamma being involved; and where the disease extends, it is usually to the internal organs, as to the liver, uterus, stomach, or lungs.

Hannah D., 40 years of age; always enjoyed robust health till the period of her marriage, since which time she has had three living children, and numerous miscarriages.

About five years ago, while nursing her second child, she had an engorgement of the right mamma, or "weed," as she terms it; this did not suppurate, and she was able to nurse the child from the left breast. The engorgement nearly subsided, and she was able after a short time to nurse the child from the affected breast; there remained, however, a hardness about the size of a filbert on the under side of the breast, near the nipple. Two years after this, her last child was born; this, for a time, was nursed from the affected breast. When the child was nine months old she was obliged to discontinue nursing it from the right breast, because the nipple was so drawn in, and somewhat painful; she feared from the soreness that she would have an abscess form, should she continue nursing. Shortly after this she came under my observation, August 27, 1860.

At this time the right mamma bore the well-marked characteristics of scirrhus; the nipple was retracted, and harder than the other nipple. The breast had an irregular, nodulated character; the veins were enlarged over the breast, and the glands in the axilla were slightly enlarged. The woman's general health was not apparently affected by the disease, and removal was urged by all the surgeons present at the consultation. She declined submitting to an operation.

Nov. 8th, 1860, she again came under observation. At this time the cachectic appearance was more marked. The mamma appeared red and irritated at points, as if about to become open cancer; shooting pains were felt through the breast from time to time. The other breast seemed to have an indistinct hardened feel in points.

Dec. 24.—Applied for relief from the lancinating pains, which were so severe that she could not sleep, and was now willing to submit to an operation. This was declined, as the cancerous cachexia was marked. She had become emaciated, of a waxy color; the breast was reddened in several points, as if ready to ulcerate; the axillary glands were much enlarged, and the left nipple was now much retracted, and a distinct nodulated character in the whole mamma, with the axillary glands much involved on the left side, also. A palliative treatment was adopted, and the patient continued to fail; the right breast ulcerated; the ulcer having the hard, elevated edge, peculiar to malignant disease, while the left breast continued to have the nodulated character more marked; the nipple to become more retracted, and then the breast apparently became smaller from the absorption of the adipose tissue, till the patient finally succumbed to the disease.

The case thus presented, through an extended period of observation, the well-marked character of hard cancer involving both breasts.

REGULAR MEETING, APRIL, 1862.

Case of Pneumo-Hydrothorax, with Specimen. Reported by Dr. J. H. H. Burge.

The specimen which I present is the left lung of a gentleman only nineteen years of age. It is beautifully illustrative of the condition of things in pneumo-hydrothorax; but, as the case presented other marked points of interest, I will briefly detail it. It occurred in the practice of Dr. Otto Rotton. He was called on the 10th ultimo, and I saw the patient in consultation with him on the 14th. The Dr. informs me that the physical signs had changed but slightly from the time of his first visit till I saw the case.

On percussion, there was great dullness over the base of the right lung, and, indeed, almost to its apex. The left chest was highly resonant, except at the most depending portion—this, of course, varying according to the position in which he lay. We did not measure the chest, but there was no perceptible difference between the two sides. Auscultation revealed in the right lung loud crepitant and sibilant *râles*, with entire absence of vesicular murmur. In the left, the most distinct amphoric sound, with the clearest and most constant metallic tinkling—entirely uncomplicated with any other sound of respiration. Sputa *rusty*—somewhat streaked with fresh blood.

Of course there was no difficulty in diagnosticating pneumonia in the right side, and pneumo-hydrothorax in the left. We sought to ascertain from the history of the case when the rupture of the left lung occurred, but, to our surprise, we learned that the patient had been regularly to his business in New York daily, and very frequently to parties in the evening, up to the very week when we first saw him. It was only upon very careful inquiry that we were told he had experienced some cough and pain in the side, for which he had taken some domestic remedies, and that several years before he had a serious fall, striking upon the left side of his chest. There was, up to the time of his death, no considerable emaciation, and his friends could hardly believe that he had suffered from any chronic disease. He died on the 21st, and the autopsy was made on the 22d.

The right lung was found to be much inflamed, and presented the different stages of hepatization. There were also a few tubercles, and one cavity in the upper lobe, of the size of an English walnut. Upon opening the left pleural cavity, a large volume of air rushed out, as if it had been confined with great pressure. The lung occupied a space not much larger than a man's hand, and there were perhaps three pints of greenish fluid in the cavity. The entire surface of the lung was covered with coagulated lymph.

But one organized band of false membrane existed, very strong, and nearly an inch in diameter. It was upon the anterior aspect of the upper lobe. Upon the anterior surface of the same lobe was an opening of the size of a goose-quill, which evidently communicated with a cavity in the lung.

Dr. ENOS related the following case of

Metro-Peritonitis.

Miss W., æt. 25 years, menstruated in Oct., 1861, one week later than she should have done. The discharge was suddenly checked, when she was seized with chill. Nausea, and severe pains in the hypogastric region, extending to the back, with great tenderness over the uterus and ovaries. Opium was given, to allay pain. The bowels were subsequently relieved by ol. ricini, and the bladder emptied with the catheter.

Oct. 27.—Has had several chills; pulse 120; bowels greatly distended, and most tender to pressure over the left iliac and hypogastric regions. Enema of tinct. opii every four hours. Emplast. hydrarg. et belladonnæ applied over the abdomen. Diet: Beef-tea, arrow-root, and wine-whey.

Oct. 30.—Pulse 120; respiration 20. Catheterized, and urine scanty and high-colored. Directed sulph. morphiæ, gr. $\frac{1}{4}$, every four hours.

Nov. 6.—Abdomen very tense. Vomiting, and starting in her sleep. Sumat. morph. sulph., gr. $\frac{1}{2}$, every two or three hours.

Nov. 11.—More comfortable. Pulse 104; respiration 15. Bowels less tense.

Nov. 13.—Patient had spontaneously two evacuations from the bowels, yellow and consistent—the first for *nineteen days.* Directed beef-tea and brandy. Morphia every four hours.

Nov. 20.—Sits up a little. Pulse 120, and feeble. Pain subsiding—urinates spontaneously. Directed quinia, 2 grs. every six hours, and three to six ounces of brandy per diem.

Dec. 7.—Pulse 100. Now fairly convalescent. Opium administered *pro re nata.* The pulse and respiration had been but slightly influenced by opium, and narcotism had at no time been induced.

Dr. ENOS thought inflammation had commenced in the uterus, unrelieved of its congestion by checked menstruation—then extended to ovaries, and finally involved the peritoneum in general.

QUARTERLY REPORTS ON MEDICAL PROGRESS.

REPORT ON OPHTHALMIC AND AURAL DISEASES.

By Wm. Frederic Holcomb, M.D., Prof. of Ophthalmic and Aural Surgery in the New York Medical College and Charity Hospital.

1. "*Case Illustrating the Beneficial Effects of Electricity in Certain Diseases of the Eye.*" By Soelberg Wells, M.R.C.S., Eng.; M.D., Edinburgh; Clinical Assistant to Mr. Bowman at the Royal London Ophthalmic Hospital, (Moorfields,) &c., &c. (Medical Circular, Vol. 20, No. 496.)
2. *Clinical Observations with the Ophthalmoscope in Morbid Changes of the Retina.* By Jabez Hogg. (Med. Circular, Vol. 20, Nos. 501 and 504.)
3. *Cases in Ophthalmic Practice.* By E. Williams, M.D., Cincinnati, Ohio. (Cincinnati Lancet and Observer, Vol. 5, No. 3.)*

1. "Although electricity is acquiring more and more repute in this country as a therapeutic agent, its employment in paralytic affections of the muscles of the eye is at present but too infrequent with us. The following case, illustrating the great benefit to be derived from its use, together with a few remarks upon the mode of application and the class of cases in which it is particularly indicated, may therefore not prove uninteresting to the medical profession at large.

"On May 15th, 1861, I was called in consultation by my friend Mr. Crosse, of Norwich, to see Mr. P., a patient of his, who had been suffering some weeks from a paralysis of the external rectus muscle of the left eye, which was soon accompanied by an evident inward squint of the same eye. The patient was a gentleman about twenty-five, of a florid, healthy complexion, but of a somewhat strumous diathesis. In the previous December, he had had measles. In March, 1861, he first complained of diplopia, and Mr. Crosse at once diagnosed paralysis of the external rectus of the left eye. This diplopia gradually increased in extent, greatly annoying and confusing the patient, who was almost incapacitated from writing, &c. The squint also became more and more apparent. During March and April, alteratives, leeches, and blisters were prescribed; in the beginning of April he commenced to take iodide of potassium. On my first seeing him, May 15th, he presented the following symptoms:

"*Movements of the Eyes.*—The movements of the right eye were normal in every direction, although they were to a very slight extent limited directly inwards and directly outwards; but this limitation was so very slight that, *per se*, it could not be looked upon as abnormal. The movements of the left eye were perfect in every direction except directly outwards, and in the diagonal direction upwards and outwards and downwards and outwards. This eye could be moved further inwards than the right. It could be moved slightly outwards, to the extent of about three-quarters of a line. This outward movement was not due to the combined action of the superior and inferior oblique muscles, for it was not zigzag or rolling, but a continuous horizontal movement, showing that the abductor was not quite paralyzed. When both eyes were open, and the patient directed to look at an object (a lighted candle) held in the median line, at a distance of eight feet, a slight inward squint (of about one line) of the left eye was at once noticeable. This squint became greater in extent the further the candle was removed to the left of the patient; for, whilst his right eye followed it, his left lagged more and more behind, (on account of the paralysis of its abductor,) and consequently, the convergent squint must increase more and more in this direction; the double images becoming, at the same time, further apart. When the candle was moved to the right of the patient, the squint became less and less, until it completely disappeared, (as also, of course, the diplopia,) when the object was brought two and a half feet into the right half of his field of vision. Two interesting phenomena (of diagnostic importance) were noticed when the candle was held slightly to the left. First, if the right eye was then covered with the hand, the left moved slightly outward to fix the object—the covered right eye making an associated inward movement; but this movement was considerably greater in extent than the outward movement of the left eye. Second, if the patient was told to strike quickly at the candle (which was brought nearer to him for this purpose) with his hand, he invariably missed it by going to the left of it."

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* Having lately been engaged as Volunteer-Surgeon in the Sanitary Commission, I have been unable to make the usual notes to the Report. H.

Diagnosis.—From the above symptoms I came to the conclusion that there was paralysis of the external rectus muscle of the left eye, with secondary contraction of the internal rectus of the same eye.

Let us now consider the cause of the affection. This appeared to be peripheral; that is, not dependent upon causes within the cranium; for there was no impairment of the mind or of the senses; his memory was good, and there was no other impairment of mobility in any other part of the body. And in the total absence of any symptom of pressure, &c., upon the sixth nerve, within the orbit, I presumed that the paralysis was most likely due to rheumatism, this being a very frequent cause of these affections, more especially during cold and wet weather, and I therefore gave a favorable prognosis, more especially as the paralysis was not of long standing. I, however, warned the patient, that although the paralytic affection might be cured, some secondary contraction of the opponent and consequent convergent squint might remain and demand an operation.

Treatment.—As the affection had gradually progressed even under the skillful treatment of his medical attendant, I naturally looked about me for some other plan of treatment, in the hope that this might prove more successful.

As I had seen electricity very much employed in Von Graefe's clinique, in paralysis of the muscles of the eye dependent upon peripheral causes, and had seen many admirable results from its regular and prolonged employment, I determined to try its effects in this case, and am happy to say it rapidly effected a cure. The iodide of potassium was continued till June 13th, but I do not think that the favorable turn in the disease was due to the action of this remedy, which had, before the application of electricity, proved unavailing even to arrest the affection. In order to free the patient from the annoyance of the diplopia, I directed the left eye to be covered, the prisms required to unite the double images being too strong and clumsy to wear: (16° for reading, 32° for distance.)

June 30th.—I saw him again; he is greatly improved; the inward squint is reduced to about a quarter of a line; and corresponding to this, the diplopia extends only five inches (instead of two and a half feet) into the right half of the field of vision.

August 2d.—Met him in the street; not the slightest inward squint, except in looking far to the left; is not at all annoyed by diplopia, except in the same direction, but can follow his professional duties, read, write, etc., without any inconvenience. Left off electricity July 15th.

September 3d.—The mobility outwards of left eye almost normal. No convergent squint until the object (held at eight feet distance) is moved four feet into the left half of the field of vision, when diplopia arises. I wished him to resume the electricity in order that the affection might be completely cured, but he had no opportunity of doing so, and I therefore ordered him to practice the left abductor by means of a prism of 5°, with its base turned inwards.

November 12th.—The mobility outwards has increased a little more; the outer edge of the cornea can be almost brought to the outer canthus. The convergent squint and diplopia now only arise when the object (still at eight feet distance) is brought five and a half feet into the left half of the field of vision. The patient considers himself perfectly cured. The electricity was first applied for five minutes, daily, by Mr. Crosse, and this time was gradually extended to twenty minutes. One electrode, covered with moistened sponge, was applied to the skin of the closed eye, exactly over the paralyzed muscle; the other electrode was placed on the temple. One of the rotating magneto-electric induction machines was used. Electricity certainly answered better in this case than I expected, for not only was the paralysis of the external rectus all but cured, but as this muscle increased in strength, the secondary contraction of the internal rectus was gradually overcome, and the squint disappeared; had the electricity been continued but a few weeks longer, I firmly believe the paralysis would have been completely cured; the patient, however, felt no annoyance from the slightly remaining paralysis, and therefore did not really care much about resuming the treatment. I may be met by the opinion that the iodide of potassium, and not the electricity, produced the benefit; but how is it, then, that under its use the patient got no better? As soon, however, as electricity was applied, the improvement commenced, and gradually and steadily continued. Electricity is indicated in paralytic affections of the muscles of the eye, dependent on peripheral causes; its action is especially marked in cases produced by rheumatism. In conclusion, I must warn the reader against ever using the continuous current in applying electricity to the eye, on account of its deleterious effect upon the retina; we should, therefore, always employ the extra current of an induction machine, using either a magneto-electric or volta-electric apparatus; each has its advantages: for a full consideration of which I must refer the reader to books on electricity: more particularly to Dr. Althaus' excellent work on Medical Electricity.

2. The invention of the ophthalmoscope did not escape the too frequent opposition raised against the introduction of anything like an innovation upon the established customs of our order. Like the microscope in its earliest days, it was at first regarded more in the light of a scientific toy, than that of an instrument of inestimable worth, in elucidating some of the most important diseases afflicting the human frame.

Those Fellows of the Medical Society of London who were present when, in the session of 1858, I for the first time in this country brought the instrument to their notice, must well remember the doubt expressed of its being of any real practical value. Nevertheless, in a short time, one and all of those who differed from my views have since discovered its worth; and in some instances, added to our then imperfect knowledge of the instrument. I believe it is generally admitted that by the aid of the ophthalmoscope, we are enabled to diagnose slight internal changes which were before unknown and unrecognized in any way, nay, quite impossible to make out. As an illustration of this fact, take the symptoms laid down in books and in clinical teaching of *retinitis*. We now see at a glance that no reliance whatever can be placed on the descriptions of only a very few years back. I need not say how much like guess-work must have been the treatment of such cases.

On the present occasion it is not my intention to treat of retinitis in all its forms, as retinitis simplex, apoplectica, syphilitica, and strumous, into which it is now divided, but rather notice one or two of those morbid changes more frequently met with and observed both in hospital and private practice. I shall first direct your attention to hyperæmia, and afterwards say a few words about apoplexy of the retina.

I have met with many cases of hyperæmia arising from overwork of the organ, exposure to cold and fatigue, and also from concussions produced by falls or blows, accompanied by some slight amount of cerebral disturbance. The ophthalmoscope reveals the slightest degree of effused blood, and we can watch day by day its gradual absorption, and the restoration of suspended vision. The change is usually characterized by intense redness, chiefly arising from the capillary injection over the optic disc, and a great degree of venous congestion, which rapidly produces loss of transparency in the retinal membrane or vitreous humor. When these changes are associated with capillary hæmorrhages, then I consider the case is one of apoplexy of the retina, and, consequently, of a more serious morbid change, often ending in total disorganization of the retina. A good example of hyperæmia occurred in a shepherd lately under treatment. This patient was much exposed during the cold nights, watching his flock; at the same time his food was insufficient in quality and quantity. His first annoyance arose from an inability to count his sheep; this was soon followed by more alarming symptoms, for he could no longer see them, and had great difficulty in finding his way home. There was little or no pain, and as nothing could be made out by the ordinary mode of examination, he was sent up to our hospital. The venous congestion was very considerable over the whole fundus; this, under good diet, nursing, alteratives, and tonics, entirely disappeared, and in a fortnight he was discharged perfectly cured.

Hyperæmia frequently occurs in young persons; among school-boys I have met with several cases. Master M. B., æt. twelve, a fair, delicate-looking boy, not very robust, after long fatiguing play, came home complaining of dimness of sight. Next day he was unable to read his lessons, but as there was no subjective sign indicative of any change in the eyes, his statement was discredited, and little or nothing was done for a week or more, when the boy's state became more alarming, and the medical attendant recommended the master to bring him to me. He could only see the largest of Jæger's test-types; there was great uncertainty in his walk, and an evident dragging of one leg. On examination with the ophthalmoscope, I found hyperæmia affecting both eyes. My treatment consisted in rest, alteratives, iron, and counter-irritation. I saw him again in a fortnight; he was then improving, and could read No. 12 test-types; and at the end of a month the retina was restored, and he has since remained perfectly well.

Master H., æt. nine, a delicate-looking boy, with a fair complexion, during a railway journey kept his head a good deal of out of window of the carriage; when he got home he complained of being unable to see. He tried to read, but found all the letters running into each other; he could only make out a part of very large type. Except a slight strabismus in one eye, and somewhat dilated state of the pupils, nothing could be made out of his case, and, therefore, a little opening medicine was given the first week. The boy still persisting in his first statement, his friends brought him to me. The congestion here was very considerable; under a similar kind of treatment as that adopted in the former case, he quite recovered.

I could multiply these cases, and quote numerous examples, with some slight variations, which occur among children of the poor in our out-patients' department; but, as I before observed, I chiefly desire to direct attention to a class of cases which have been quite unintelligible, and must have remained so without the aid of the ophthalmoscope.

The more serious form of disease, apoplexy of the retina, does not so frequently come under our care as that just spoken of. The ophthalmoscope, however, at once reveals to us the patches of effused blood distributed over the retina, and which frequently finds its way into the vitreous body. The most noteworthy part of our treatment in such cases, is the speedy relief of the more urgent symptoms by the division of the ciliary muscle, especially when effused blood is seen in the vitreous humor, or making its way towards the anterior chamber. The pressure on the retina is at once relieved. As an example, I would direct your attention to the case of a soldier, whose loss of sight was occasioned by an epileptic seizure. On examination, both retinæ were covered with clots; the central vessels and optic discs hidden from view by the effused blood. An unfavorable prognosis of this patient's case was given, and before remedies could be employed, and during the same night, he had another fit, which was followed by another, and ending in coma. A good deal of attention has been paid to retinal apoplexy, and we have now made out a form frequently associated with *albuminurial.*

German writers have attempted to give us rules whereby this form of the disease may be the more readily distinguished; and I beg to lay before you their recorded observations. It is said that "retinal apoplexy arising from albuminuria may be distinguished from that produced by other causes. 1st. In apoplexy from albuminuria, the two retinæ are commonly attacked at the same time, although in a more or less degree. In apoplexy dependent on other causes, one eye alone is generally affected. 2d. In albuminuria the effusion takes place around the optic papilla, in the form of a fan, but only rarely so in other cases, where also the effusion is situated at the lower part of the retina, behind or above the papilla. 3d. In albuminuria, besides the apoplectic clots and the injection of the papilla, there is a marked muddiness of the whole central part of the retina, dependent on commencing fatty degeneration; on the contrary, when the apoplectic spots, although, perhaps, as numerous as those dependent on albuminuria, arise from another cause, the retina is transparent, even in their immediate neighborhood. 4th. In albuminuria, most of the apoplectic spots are arranged along and close to the veins, and generally behind these vessels, so as to present a linear striated appearance. In other cases, *un*-connected with renal disease, the rupture of the vessels takes place at their bifurcations, and the spot has a triangular or irregular form. 5th. A peculiar phenomenon is manifested in retinal apoplexy, from kidney disease, in the whitening of the red patches at an advanced stage of the disease. In other cases, the fluid part of the blood is absorbed, and the spot may thus become of even a deeper tint than before.

In the advanced stages of kidney disease, these appearances are well marked, and I believe have been noted by most ophthalmologists. Nevertheless, we must not expect to find these changes in all cases of albuminuria, as I shall presently show you in a few which have fallen under my own observation.

The retina is held together by a highly-developed structure of connective tissue formerly believed to be nervous fibres, but not so now. In Bright's disease, it is this connective tissue which first shows fatty degeneration. In many of those cases in which the examination of the retina by the ophthalmoscope has first suggested the existence of kidney disease, at a time when there was no well-marked symptom to call attention to it, the retina shows whitish granular masses around and near the optic nerve, fatty degeneration, and numerous extravasations of blood. These changes have been confirmed by post-mortem examinations. There are other appearances to be noted, such as the formation of large granular corpuscles, with a certain swelling up of the nerve-fibres, causing them to look like ganglionic cells, and fatty degeneration and sclerosis of the choroidal vessels. I shall now relate a case or two which, as I have before stated, show some important deviations.

At the beginning of 1861, a young lady, twenty years of age, came under my care, with unmistakable symptoms of albuminuria, but at that time I failed to make out the characteristic changes in the retinæ. There was some congestion of the fundus, with a slight haziness, which gave a little muddiness of appearance to it. I made out a small amount of effusion between the retina and choroid in both eyes, but the sight was not impaired thereby. As the disease advanced, vision became greatly affected, so that for ten days before death she saw with difficulty, and for the last two or three she could scarcely distinguish night from day. During the same period the œdema was very considerable, and only a very small amount of urine was passed involuntarily. No post-mortem permitted.

Another case was that of Mr. U., æt. 60. The loss of vision was wholly confined to the left eye. The kidney disease was diagnosed upwards of two years before death. When he consulted me the sight of the left eye was believed to be lost, but by a course of medical treatment he regained nearly half vision; that is, when he turned his head to the left shoulder he could see a dim outline of my face, and large objects generally. Just at the time I appeared to be effecting good, an attack of hemiplegia carried him off quite suddenly. The first symptoms of the fatal attack were pain in the head, followed by slight twitching of the face, and impediment of speech. This passed away after a few days' medical treatment, but in three or four weeks from this time another fit deprived him of the use of the left side. The amaurosis of the left eye was complete, and coma and death ensued in forty-eight hours.

I have seen several cases of symmetrical apoplexy of the retinæ where no symptom of kidney disease existed. A case in point was reported in the pages of a contemporary (the *Medical Times*) last year. In this case there was partial paralysis of the left side, preceded by head symptoms, which were persistent. The urine was carefully examined, but was perfectly normal. Unfortunately, the pupils were dilated by atropine before their condition was noted. The ophthalmoscope showed a small apoplectic effusion just below the yellow spot in each eye. The above case supplies us with an interesting example of symmetrical extravasation of blood from the retinal vessels occurring with other symptoms of disturbed cerebral circulation. The following note is appended to this case:

"From these cases it appears there are two groups of cases in which retinal apoplexies are observed. In one, the effusions take place in connection with albuminuria, and are, perhaps, quite as nearly allied to purpuric ecchymoses as to those forms of hæmorhages usually designated as apoplexies, and occurring in patients of all ages. In the other group, the retinal affection occurs coincidently with other indications of cerebral disturbance in elderly people chiefly, and without any abnormal state of the kidneys coexisting. In these it is in all probability dependent upon disease of the coats of the vessels, and the rupture, no doubt, occurs during a temporary congestion of the whole cerebral system, the pressure of which the weakened vessels of the retina are unable to sustain."

I now desire to direct your attention to the value of the ophthalmoscope in the detection of albuminuria in cases where the kidney disease was not before suspected. I select a couple of the more recent cases from our Hospital Case-Book.

Daniel F., æt. forty, admitted August 30th, 1861, a gas-fitter, complains of defective sight in both eyes; has been rather a free liver, and more than once under the influence of lead-poison. About two years ago had swelling of the legs, but as no inconvenience arose therefrom, no notice was taken of it; was not aware whether he passed a small quantity of urine. About three months since he suffered a good deal with headache, and had frequent calls to pass his water during the night; the legs again swelling; now decidedly œdematous; a slight pain in loins, but not enough to complain of; urine small in quantity, and of low specific gravity; pupils normal.

Ophthalmoscopic Examination.—Apoplectic spots distributed over fundus, but more thickly about the optic discs, the left eye more than the right; interspersed throughout can be seen whitish patches having a granular appearance, and highly refractive: pronounced to be fatty degeneration of retina. It must be observed that examination of the eyes led to the question of the condition of the urine, and decided the course of treatment, which consisted in the administration of pulv. jalapæ co., and the use of the preparations of iron. The patient recovered in about two months after the date of admission.

John W., æt. twenty-six, plumber, admitted September 5, 1861; always had good health and sight; about ten months ago received a blow over left eye, and shortly after dimness of sight commenced; this chiefly annoyed him towards night. The right eye, three months ago, also became affected, when he applied to a medical man, who leeched and blistered him; but his sight continuing to get worse, he applied to the Royal Westminster Ophthalmic Hospital. The eyeballs rather harder than normal, and pupils somewhat dilated, and inactive; with the right eye he can count fingers, and put his finger upon the largest test-types; with the left the fingers and largest types appear to be black patches. The fundus in each eye, especially about the optic discs, covered with hæmorrhagic spots and white patches; veins remarkably turgid, and dark in color. I then examined his urine, which was of a low specific gravity, and albuminous; found his legs slightly œdematous, and other evidences of albuminuria.

To relieve the intra-ocular pressure and turgidity of the circulation, I divided the ciliary muscle in both eyes; on the third day from the operation, the vision was greatly improved. I then put him under a similar plan of treatment to that adopted in the former case, combining small doses of hyd. c. creta with the pulv. jalap. co. On the 12th he was able to go about the hospital, and in about three weeks was discharged; before leaving he could see Nos. 10 and 12 test-types.

Other cases of retinal apoplexies have been equally benefited by division of the ciliary muscle. I will not venture an explanation of this operation just now, contenting myself with stating the fact, that other surgeons may try it for themselves.

Dr. R. Liebreich relates an interesting case of retinal apoplexy associated with Bright's disease, in the *Archiv für Ophthalmologie*, 1859. He gives, likewise, a summary of the diagnostic appearances to be looked for. He writes: "It commences with retinal hyperæmia, the veins being fuller and more tortuous, becoming dark-red, and sharply outlined, or covered with a slightly dulled retina. Blood, frequently in the form of radiating streaks, is deposited between the nerve-fibres, sometimes as oval or round spots, which still more obscures the vessels and fundus. The optic disc is ill-defined, appearing faintly under the effused blood. Small white, round, elevated spots are subsequently seen in different parts of the fundus oculi; these increase in number around the optic disc; there is, however, a grayish part of the retina left, somewhat circular in form, and rather larger than the optic disc. From its periphery a thick, milk-white layer of granule-cells is deposited, and continued along the course of the larger vessels. Later, changes take place in the retina on the edges of the layer; the granule-cells do not appear in large white spots which have coalesced, but as groups of smaller ones, which arrange themselves peculiarly in the form of rays, while the middle of the macula lutea appears dark-red, contrasting with the white patches which surround it. In the normal parts of the retina, small ecchymoses soon take place, and more extensive extravasations cover a great part of the layers of fat, and transform the whole into a dark-red surface, or the retina becomes detached in its normal parts."

Virchow regards the white patches of fatty degeneration described as enlargements of the ganglia-cells, and not hypertrophy caused by fatty degeneration. Further microscopical research will alone decide this point; in the mean time, when such appearances present themselves to the eye, we shall be led to look closely after the heart and kidneys.

3. Case I.—*Trauma of the Eye—Tetanus.*—W. M., a stout laborer, 30 years of age, was injured in the right eye while hammering upon a steamboat boiler, on the 4th of April last. His sight was instantly annulled, and he called to consult me the same afternoon. There was a ragged, irregular wound in the edge of the right lower eyelid, just external to the punctum, and one in the ball of the eye also. The latter wound, about three lines in length, was situated at the inner and lower part of the globe, one-third of it in the sclerotic and two-thirds in the cornea. The iris and corpus ciliare were divided to the same extent, the anterior chamber effaced, the ball soft and partly filled with blood—from all of which I inferred the presence of a large foreign body in the eye. Convinced of this fact, I urged an immediate operation for its removal. Unfortunately, the patient did not *agree* with me in my *diagnosis.* As he was hammering when wounded on the large round end of a copper rivet, he believed that was what struck him, and it could not be in the eye. He felt very little pain, and only wanted some *drops* put in the eye to *restore the sight.* I pressed upon him the certainty that the eye was lost, that it would pain him excessively, and not only endanger the sight of the other, but even imperil his life. Still he refused to have anything done at

all, unless I would promise to restore his sight. He left my office, and I heard nothing more of him for three days, when he sent for me to call and see him. He was then suffering extreme pain in the circumorbital region—the eye was intensely inflamed, with phlegmonous chemosis, haziness of the cornea, turbidness of the aqueous humor and crystalline lens, and much swelling of the lids. He still refused an operation, and persisted in believing there was nothing in his eye, because the pain was most severe in the surrounding parts of the face and head. I treated him, but under protest, with antiphlogistics and large doses of morphine at night. His sufferings continued most intense till the 24th of April, three weeks from the time of the accident, when his agony became so great that he yielded to my proposition to remove the eye. Assisted by Dr. Nat. Foster and my private student, I proceeded to extirpate the organ by the method of enucleation. In consequence of violent muscular contractions and symptoms of asphyxia produced by the chloroform, which was suspended several times and then renewed with the same results, I operated without complete narcotism. The struggling of the patient and the great swelling of the parts made the operation difficult. During this time the original wound opened, and there escaped considerable pus from the interior of the eye. I then put one blade of the forceps through the wound, got a firm hold upon the sclerotic, and succeeded in the removal. I put a small sponge into the cavity, applied cold-water dressings, and administered half a grain of morphine. The following night he rested well, and the case progressed favorably till the evening of the 27th, three days after the operation, when he began to experience some rigidity about the muscles of the jaw and difficulty in swallowing. The following morning all the muscles on the right side of his face were perfectly inactive and flabby, while those on the opposite side were rigidly contracted, giving the patient the peculiar physiognomy of facial paralysis. He could still open the mouth about half an inch and swallow, but with labor. The tetanic contraction invaded successively the muscles of the neck, chest, abdomen and limbs; and he died on the morning of the 5th of May, one month after the accident, ten days after the operation, and seven days after the tetanus set in.

On inspecting the eye, I found the retina destroyed by the suppuration, excepting a small floating portion around the optic entrance—choroid thickened and friable from the presence of lymph in its tissue—iris discolored, swollen, and pushed forward against the cornea; pupil closed by a plug of yellowish lymph; lens turbid, very soft, and much diminished in size. Behind the iris, and moulded to its posterior surface and the inner surface of the corpus ciliare, was a mass of lymph, yellowish in color, pretty firmly adherent to the surfaces from which it had exuded, and filling up nearly the anterior half of the cavity of the eye. This mass of lymph, permeated with numerous pus-globules, was thickest and extended farthest back at the outer side of the eye, where I found just back of the equator a large scale of iron sticking firmly in the sclerotic. It was, by actual measurement, half an inch long, one-quarter of an inch wide, and a little thicker than ordinary foolscap paper. Its surfaces were smooth, but the edges rough and irregularly serrated. Near the middle of its length were two corresponding notches, one on either side, in which it was firmly embraced by the sclerotic coat, one-half projecting into the orbit and the other into the eye. It had passed through the globe and half way out on the opposite side. In this position the offending body was held so firmly that I had to enlarge the wound in the sclerotic with the scissors, in order to extricate it.

From the beginning I had observed that the eyeball moved very little, but its fixity was attributed to exudation in the ocular sheath, rather than to the possibility that it might be *spitted* by the foreign body. The severe character of the wound and the long sojourn of so large and rough a body in the eye no doubt gave rise to the fatal tetanus. It is not at all likely that the operation either gave rise to or hastened the tetanic spasms. Indeed, it is most probable they would have occurred sooner if the patient's intense sufferings had not been relieved by the extirpation. Had he submitted to the removal of the eye or to partial extirpation and the extraction of the foreign body immediately, or within a few days even, after the injury, he would most assuredly have escaped with his life.

The possibility of the supervention of tetanus in cases of injury by a large and rough foreign body which remains in the eye, should be urged as an additional necessity for surgical interference. In such cases the vision is inevitably destroyed, the globe will atrophy after months of suffering, which greatly endangers the sight of the other eye. Even after atrophy, the pain and risk of destructive sympathetic inflammation of the well organ do not often disappear so long as the exciting cause remains. There is, therefore, everything to be gained by an early operation, and nothing but disaster to be expected from delay, except the mere possibility that the foreign body may become encysted and remain harmless. Even when encapsuled, the body may be detached by accident years afterwards, and give rise to destructive inflammation. Instances of this kind are recorded; and I have seen one lately where a piece of percussion cap, after remaining some two years encysted in the iris, was dislodged by an accidental thrust of the patient's finger. It was small, and moved about freely in the anterior chamber, always concealed in the most dependent part, in the sulcus between the periphery of the iris and margin of the opaque sclerotic, which extends farther forward than the point of attachment of the iris. It only came into view when the head was inclined so far forwards as to cause it to slide along the concave surface of the cornea towards its centre. The eye was constantly injected, somewhat painful, and the sight impaired. The patient was not inclined to have it operated unless I was *perfectly sure* of the successful removal of the foreign body. He returned home to the country, and I have since heard that his eye is still painful and the vision getting worse. Mr. Nunneley has published a case in the *Ophthalmic Hospital Reports*, vol. ii., page 244, where a piece of stone coal remained thus encysted in the eye for ten years, when the patient was struck violently on the side of the head, the fragment dislodged by the concussion into the anterior chamber, where it caused much inflammation, and from whence it was removed by Mr. N.

The rarity of tetanus from injuries of the eye may be inferred from the fact that W. White Cooper, in his treatise on wounds of the eye. is unable to refer to but two cases—one which occurred in St. George's Hospital in 1847, from a rupture of the cornea by the end of a whip-lash; the other during the Crimean war, from the explosion of a shell, which drove a large fragment of stone and several pieces of gravel into the orbit. The bony orbit was fractured extensively, "the sclerotic coat of the eye torn open, and much gravel imbedded in its interior, and some fragments had been forced into the substance of the optic nerve."

The largest foreign body I have ever removed from the interior of the eye was a rough piece of cast-iron, nine-sixteenths of an inch long, five-sixteenths wide, and two-sixteenths thick. It had entered through the cornea and iris, and lodged deep in the vitreous humor, where it had remained two weeks, giving rise to terrific pains. I amputated the anterior part of the globe, including the iris and corpus ciliare, and extracted it with the forceps.

Case II.—*Piece of Cap in the Vitreous Cavity—Extirpation.*—T. H., aged about 17, had been injured by a piece of cap two months before he consulted me. It had entered about midway between the centre and external margin of the cornea, and passed through the iris into the back part of the eye. When I first saw him there was great pain in the eye and neighboring parts of the face, pupil closed by a false membrane, iris discolored, and anterior chamber about one-third filled with pus. I made a paracentesis of the cornea with some relief to the pain for a few days, and the hypopynm was partly absorbed. The irritation again returned, the hypopyon increased, and I then made an iridectomy inwards, which was followed by decided improvement in the general appearance of the eye. About three weeks after this operation, the same symptoms returned, attended by the appearance of muscæ volitantes, flashes of light, photophobia, a dilated, oscillating pupil, and indistinctness of vision in the previously well eye. As the danger from sympathetic inflammation was imminent, I did not hesitate to enucleate the offending organ. The patient soon recovered from the operation, and the sight of the threatened eye gradually returned to its former perfection.

Dissection of the Eye.—I cut carefully through the sclerotic about two and a half lines from the entrance of the optic nerve, when there escaped several drops of reddish-yellow serous fluid which had been thrown out between the choroid and retina, detaching the latter membrane in the shape of a funnel, the small end adhering around the optic papilla and the large at the ora serrata retinæ. The floating retina was thrown into numerous folds running from before backwards, and so opaque that I could not see through it into the vitreous fluid. On opening the detached retinal pouch at the back part, I found the shrunken vitreous humor of a light straw-colored tinge, but with nearly its natural consistence and transparency. Projecting into that fluid from the corpus ciliare at the external side of the eye, I discovered a globular yellow mass of about the size of a large pea. On removing the vitreous humor carefully from behind forwards, I found it was an abscess adhering to the inner surface of the corpus ciliare and choroid, the retina for a short distance back of it being agglutinated to the choroid.

When I touched the delicate membranous sac with the point of a knife, several drops of liquid pus escaped, and in the interior of the abscess I found a square piece of cap of about the size of a small pin's head. Adhering to the internal surface of the ciliary body at the seat of the abscess, and extending forwards over the entire posterior surface of the iris, was a thick layer of yellowish lymph, which blocked up the pupil as well as the artificial opening made by the iridectomy, and agglutinated the whole iris with the capsule of the lens. The lens was diminished in size, of a light amber tinge, and quite soft.

The healing process was soon accomplished, and the patient now wears an artificial eye. The photophobia, luminous flashes and misty vision of the left eye, although immediately diminished, did not entirely disappear for six or eight weeks after the operation, when the vision was restored to its former perfection. Extirpation, partial or complete, of the painful and disorganized eye, affords the only prompt and almost certain means of rescuing the other when it is threatened with destructive inflammation. If not deferred till the retina and choroid have suffered incurable textural changes, the operation, especially in traumatic cases, nearly always affords immediate and permanent relief. The improvement in the patient just detailed, although satisfactory in the end, was much slower than usual. I have operated a large number of times where the other eye was in great peril, and have not failed in a single instance in saving the sight. In former numbers of this journal I have published several of these cases with remarks, to which I can only refer at this time. A few months ago I removed an eye that had been destroyed by a piece of cap two years before, during all of which time the patient had been unable to read or do any kind of work in consequence of the constant irritation and neuralgic pains in the eye and head. The sight of the other was much impaired, but in *two weeks* he went to work, and is now well and enjoying perfect sight. I found the foreign body imbedded in a mass of lymph behind the lens.

But five days ago I amputated the anterior part of the globe, including a narrow zone of the sclerotic, and with it the iris and larger portion of the corpus ciliare, in a young man who had been suffering from constant inflammation of the eye, with great pain and repeated attacks of hypopyum for three months. When I saw him first, three weeks ago, his eye was highly injected, with closure of the pupil, anterior synechia at the seat of a small cicatrix in the cornea, and a considerable quantity of pus and lymph in the bottom of the anterior chamber. He stated that his eye had been injured by a corn-blade some two months previously. He had jumped out of a wagon in a corn-field, and felt a sudden hurting in his eye when he struck the ground, but did not remember feeling a corn-blade or anything hit his eye at that time. I administered purgatives, anodynes at night, and sulphate of atropia locally. He improved for some days, when the hypopyum increased from a discharge of viscid yellowish lymph which flowed slowly from the upper margin of the iris down its anterior surface into the bottom of the chamber. In a short time this began to diminish, and in the course of two days was all absorbed. Still the soreness, injection and tenderness to the light continued. In conversation with him one day he remembered that he had shot a pistol a few hours before the time when he jumped out of the wagon, and at the moment of the discharge he felt something hit the eye, saw a flash, and felt the tears suddenly run down his cheek. It hurt but an instant, and did not seem to affect his sight—so he had entirely forgotten it till it was suggested by a remark I made about the frequency of injuries from this source.

The persistence of the inflammation and frequent recurrence of the hypopyum in cases of injury, indicate usually that there is suppuration in the vitreous cavity also, and that a foreign body is in the eye. This fact, taken in connection with the patient's history of the pistol-discharge, led me to infer that the eye had been wounded by a fragment of cap which had entered, and still remained, perhaps, in the vitreous cavity. The painful organ had begun to atrophy, and the other was weak and tender to the light. So I resolved to operate and relieve him at once of the persistent pain and the danger to the sight. The patient was chloroformed, and I removed the anterior sensitive part of the globe as in the last case referred to above. The lens and part of the vitreous fluid were discharged, with several irregular masses of yellow lymph that adhered to the anterior part of the choroid. Downwards and inwards in the vitreous humor, I saw a round yellow mass, and seizing it with the forceps, I found it was an abscess, and a few drops of pure fluid pus escaped from it. I found no foreign body, however, but am disposed to think it was surrounded by this abscess, and either escaped with the pus unperceived, or still remains in the sclerotic cup. It may escape with the suppuration, if it is still in the eye, or remain harmless in the stump after the wound heals. In several instances where I have operated by partial amputation of the eye, when it was suspected that there was a foreign substance in it, none has been found—yet all of them were effectually relieved. The patient is already much better, and I have little doubt but that the result will be complete. The large amount of yellow lymph and the distinct abscess found in the vitreous humor confirmed my diagnosis that the eye was hopelessly lost, and fully justified the apparently severe procedure adopted in this case.

The presence of a *veritable encysted abscess* in the vitreous humor adherent to the inner surface of the choroid, (from which membrane no doubt the pus was formed,) which was discovered in this case and in the first one detailed in this paper, is an interesting fact, and one that does not seem to have attracted much attention from most of writers on this subject. In severe traumatic inflammation of the eye, especially where a foreign body has passed into it and remains there, the whole or a large part of the vitreous cavity is often filled with lymph rendered yellow by pus-globules intermingled with it. But genuine abscess in the vitreous humor is comparatively rare.

The enormous amount of yellow lymph effused in the bottom of the eye where a shot, piece of cap, scale of iron or other foreign substance has penetrated far into that organ, may be judged of from the yellowish reflection seen deep behind the pupil, when the latter remains open and the lens transparent. Every oculist of any experience has often been struck by the remarkable appearance of the depths of the eye under such circumstances.

Why I prefer *partial amputation* to *extirpation* of the globe, in most cases where surgical interference for the relief of pain and the salvation of the other eye is demanded, I have stated in a former paper, published in this journal.

The pathological anatomy of the eye has been very materially advanced by the careful dissections and microscopical examinations of diseased globes removed for the protection of the remaining useful but menaced organ, since this has become an established practice among nearly all ophthalmic surgeons. Some excellent articles have recently been published in the *Archiv für Ophthalmologie*, on the formation of pus in the vitreous cavity after injuries, depression of cataract and suppurative choroiditis from other causes. Although we call the disease suppurative panophthalmitis, by far the largest portion of the exudation is lymph, with pus-globules disseminated through it, and giving the mass a yellow color. Sometimes, however, as I have stated, the pus element predominates, and we have the eye filled with fluid pus, or else distinct abscesses in the vitreous humor.

REVIEWS AND BIBLIOGRAPHY.

A Practical Guide to the Study of the Diseases of the Eye; their Medical and Surgical Treatment. By Henry W. Williams, M.D., etc. Boston: Ticknor & Fields. Philadelphia: J. B. Lippincott & Co., and Lindsay & Blakiston. 1862. 8vo, pp. 317.

In this *ophthalmic age* of medicine and surgery, the advances made by the leaders are so great, and the researches so profound, that unless one has peculiar opportunities and rare talent, he fails to appreciate the theories, writings, and treatment of diseases of the eye and its appendages, as set forth by modern writers and teachers of ophthalmology.

Doctor Williams, of Boston, in the Preface of the above work, states that "he has endeavored to supply a want which his relations with junior practitioners and students have shown him to exist." * * * "But he would not have assumed his task except from a desire to fulfill the duty which he believes to be incumbent on every physician, of adding something, if possible, to the stock of knowledge which it is the glory of our profession to regard as the common property of all its members. He has hoped to do this, by promulgating new and original views, which he deems highly important, upon certain of the subjects considered in this treatise, and by facilitating, by simplified classification, the study of what at first sight seem to be the intricate and complicated phenomena of diseases of the organ of vision."

The author has undertaken a difficult task—viz., that of writing a useful book on diseases which, as a class, are complicated, and of telling the profession, in a clear style, much about common affections, while referring only cursorily to the diseases which more rarely attack the eye. Our own settled opinion is, that if he had written a book on the anatomy and pathology of the eye and its appendages, (proofs of the incomplete knowledge of which we meet with every day,) he would have rendered a greater service to the profession in general, and to *students* in particular. "A little knowledge is a dangerous thing" in the anatomy and pathology of the eye. And there can be no evading the conviction that the doctor who does not know *certainly*, as ONE CAN, about a disease of the eye under his charge, is guilty of imprudence at least, if he continue to treat the same without consultation.

Physicians who read Dr. Williams' book will appreciate that they have much to learn, and when they are in doubt, will do well to call in additional counsel early.

It is useless to mention at length any views we entertain at variance with those of Dr. Williams. Specialists are prone to have hobbies, but it seems strange that Dr. W. should give such a wide berth to nitrate of silver, when men of vast experience extol its virtues, although they do not by any means eschew the sulphate of copper.

Our own experience teaches us that no *one* remedy can be used advantageously for a long period. There are cases in which we believe the use of the pure arg. nit. in stick is indispensable; but, as a general rule, we prefer the weak solutions. We have long made crayons of sulphate of copper, by *sawing* the large masses into square sticks, and then rounding them with coarse sand-paper, and smoothing them with a wet cloth. (See page 19 of Dr. W's' book.)

The work is practical in its character, and shows to us that Dr. W. could have written one much more complete, and consequently more creditable to American medical literature. He has, however, accomplished all he proposed to do, and his book will become a *Manual of Ophthalmic Diseases* in our medical colleges.

We cannot omit remarking, that the paper and typography are superb. It merits a calf binding, and would command the necessary increase of price.

We commend it to the profession and students of medicine.

W. F. H.

Advice to a Mother on the Management of her Offspring. By PYE HENRY CHAVASSE, Fellow of the Royal College of Surgeons of England; formerly President of Queen's College Medico-Chirurgical Society, Birmingham; Author of "Advice to a Wife on the Management of her own Health." "*Lo, children and the fruit of the womb are an heritage and gift that cometh of the Lord.*" Reprinted from the Sixth London Edition. New York: Baillière Brothers, Publishers, 440 Broadway. 1862. 12mo, pp. 172.

Verily, "the more well-written books on 'common things' are circulated among the reading classes of the community, the more extensive will be the diffusion of a strong antidote against the power of spurious and vain knowledge." The necessity and good effects of making mothers acquainted with the rational management of children are not only obvious, but have probably been impressed on his mind by the experience of every practitioner. To write a popular book on this subject, satisfying the just demands of the medical critic, is a more difficult task than any one can readily believe that has not tried something of the kind. Although almost all the medical books for the people actually published are written by the mediocre in the profession, and still worse; the most gifted and learned should in reality find such tasks amply suitable to call forth the exercise of their best faculties. The author of the little work before us, in answer to the self-imposed preliminary query, "I wish to consult you on many subjects appertaining to the management of children: will you favor me with your advice and counsel?" lays down the following as his plan:

"I shall be happy to accede to your request, and to give you the fruits of my experience in the clearest manner I am able, and in the simplest language I can find—freed from all technicalities. I will endeavor to guide you in the management of the health of your children; I will warn you of approaching danger, in order that you may promptly apply for medical assistance, before illness has gained too firm a footing; I will instruct you in the *immediate* employment of remedies in case of accidents—where delay may be death; I will tell you how a sick child should be nursed, and how a sick-room should be managed; I will use my best energy to banish injurious practices from the nursery; I will treat of the means to prevent disease, where it is possible; I will show you the way to preserve the health of the healthy, and how to strengthen the delicate; and I will strive to make a medical man's task more agreeable to himself and more beneficial to his patient, by dispelling errors and prejudices, and by proving the importance of your *strictly* adhering to his rules. If I can accomplish any of these objects, I shall be amply repaid by the knowledge that I have been of some little service to the rising generation."

He then goes through 306 questions and answers, disposed of under the three headings Infancy, Childhood, and Youth, detailing for each of these ages the proper ablution, clothing, diet, air, exercise, sleep, prevention of disease, etc., etc., etc. The form and manner throughout are unexceptionable. In the matter of the matter we would here and there make slight alterations; but on the whole, the advice is so sensible and apropos, that we have already caused one of our "very best" mother-patients to buy the book; shall gladly recommend others to "follow suit;" shall freely circulate our copy among those unable to procure it for themselves; and, finally, unhesitatingly advise our readers to do in this respect what we have done and intend to do. *

Is Tracheotomy in True Croup a Justifiable Operation? By JOHN O'REILLY, M.D., Licentiate and Fellow of the Royal College of Surgeons in Ireland; Resident Fellow of the New York Academy of Medicine; Member of the Medico-Chirurgical College of New York. Hall, Clayton & Medole, Printers, 46 Pine Street, New York. 1862. 8vo, pp. 21.

The author has lately become pretty extensively known as a prolific pamphlet writer. He now thinks "the great ability, learning, research, ingenuity and plausibility displayed by the advocates of the revival of the (almost exploded) operation of tracheotomy in croup, demand sober reflection as well as strict investigation, inasmuch as the character of the Academy might possibly be placed in jeopardy for sound judgment and discrimination, by recommending or endorsing a practice which future experience might demonstrate and prove to be erroneous and uncalled for, as well as derogatory to scientific operative surgery;" and "*for these reasons*, as a member of the Surgical Section, I am compelled," he says, "to protest most earnestly against the operation of tracheotomy in true croup."

"I am satisfied (it may be presumptuous to say so) that no person up to the present period, with the exception of myself, has attempted to give a rational idea of the *modus operandi* of medicines in the treatment of disease." [!] He kills two birds with one stone, which "not only overthrows the arguments of the surgeons who so strenuously recommend bronchotomy, but which further overthrows the theory of the modern physiologists who insist and teach that the blood is aerified by the process of *endosmose* and *exosmose*, or the soaking in of oxygen and the soaking out of carbon."

"The diagnosis between true croup and secondary croup should be the great object of the physician and surgeon in the first instance, with a view to giving a true prognosis, and equally with a view to the proper medical and surgical treatment to be pursued."

"The advocates of the operation of tracheotomy in croup do not seem to recognize that there is any degree of importance to be attached to the circumstance as to whether the case that comes under notice or requires the operation, in their minds, is one of *true* or *false* croup.

"The statistics afford no information on this point, and the operators certainly do not appear to be impressed with the necessity of making the distinction. It will, indeed, be admitted that there are several cases of secondary croup where a surgeon may be called on to perform the operation, and hence his reputation will be at stake unless he is able to make a correct diagnosis between *true* and *false* croup.

"The great and fundamental distinction between primary and secondary croup consists in the mode of secretion of the false membrane. In secondary croup, the trachea can be opened below the false membrane, as demonstrated by Rillet and Barthez; whilst in true croup, the operation must be performed above the false membrane. In the former case, there is a fair prospect of success, whilst in the latter there is none."

"I have further to protest against the operation of tracheotomy in true croup, on the following grounds:

"*Firstly.* That the operation cannot be productive of advantage, inasmuch as the air cannot be brought in contact with the sound part of the lungs in consequence of the diseased action of the organic glands, which have thrown out a false membrane in the trachea and bronchi, and a similar substance to the false membrane in the air-cells, which thus *throws up a blockade against the contact of the air with the pulmonary glands.*

"*Secondly.* That there is *prima facie* evidence that the operation is useless, inasmuch as the patient dies *after the operation* at certain intervals, as before stated.

"*Thirdly.* That it is well established, that in cases suitable for the operation of tracheotomy, such as foreign bodies in the trachea, idiopathic or specific laryngitis, secondary croup, there is very little danger to be apprehended from the operation; it therefore follows that the great mortality attendant on the operation for true croup must be the consequence of some other difficulty in addition to the impediment presented by the false membrane to the entrance of air into the lungs: the truth is, the patient dies from exhaustion of the organic nervous system and want of oxygen, when death takes place after the operation."

We have thus, by quoting what seem to us the best and most intelligible portions of his essay, certainly fairly stated Dr. O'Reilly's views, and at the same time, also, we trust, in a manner to enable the intelligent reader to appreciate them. The pamphlet before us contains a number of citations mixed up with assertions, some of them "original," others not; some well known and true, some unsupported and unproved, mostly entirely irrelevant to the only question at issue. Several times the author falls into the fallacy of drawing absolute and positive conclusions from conditional and guarded premises; of one "explanation," even he himself "cannot help asking" whether it is "so incomprehensible, so far-fetched, so unfounded, so utopian, so original, as to baffle the understanding, to create an irresistible incredulity in the mind, to present an insoluble enigma to the intellect or hidden mystery to mankind?" This query he answers with "Certainly not;" and so forth. Every man *should know himself*, and whoever reads this pamphlet, be he physician or layman, will not be left in doubt as to the author's opinion of himself. In diction he is sometimes quite unfortunate; the rules of syntax are ignored, and his expressions involved. In some cases his meaning can be made out well enough, though, with strict grammatical construction, the language conveys something entirely different; for example—and we instance the first that happens to strike us at this moment—we are told, at p. 13, that it is well known that "calomel not only prevents, but causes, the absorption of lymph," and the like.

Dr. O'R's concluding paragraph reads thus: "As an apology for the crude manner in which this paper is written, want of time prevents me from doing the subject proper justice. I need scarcely say, I disclaim being influenced by any motive, in endeavoring to overthrow the opinions of the learned gentlemen who preceded me, except the anxious desire to promote the good of the community, and the honor, dignity, and usefulness of the profession, and to demonstrate that the revival of bronchotomy by Bretonneau should not be upheld, practiced or sanctioned by the Fellows of the Academy of Medicine of New York."

We presume it is unnecessary for us at this time to assure the readers of the MONTHLY that, in categorically answering the question proposed, we entirely and totally disagree with the author. We would express our belief, however, that at the bedside his practically plastic mind would cause him to agree with us in every case really requiring the operation. Tracheotomy in croup never was, is, or can be, the immediate *refugium*, or, in itself, remedy proper, but it meets a most, if not the most, life-threatening symptom—danger of suffocation. No one, unbiased, can, after properly informing himself on the subject, entirely reject it. Not only IS *Tracheotomy in True Croup a Justifiable Operation*, but, under circumstances, the question may, more seriously too, arise, Is it not unjustifiable to refuse or neglect to perform it? *

The American Journal of Ophthalmology. JULIUS HOMBERGER, M.D., Editor and Proprietor. New York, July, 1862. Baillière Brothers, Publishers. Vol. I., No. 1, pp. 48.

Agassiz said lately, "The college that has at last given a chair to a specialist has certainly taken a long step in advance. I hardly expected ever to see it in this country."

The learned Cambridge Professor knows full well that it is next to impossible for any man to know much of *every* department of science; but that almost any mind is fitted for, and can become thoroughly informed in, some one branch of science or art. Those distinguished in the European medical world have gained their reputation in special departments.

American doctors must perfect themselves in special branches if they would attain the highest excellence. It has been already proved that the prejudices, bitter as they are against those who devote themselves to a particular branch of the profession, are not insuperable, and specialists can point to names illustrious at home and abroad, as well as to results which could only be obtained by thorough and practical scientific knowledge. We are glad to note every indication of progress, and cordially welcome the appearance of a journal devoted to a *specialty.* The *American Journal of Ophthalmology* is published for the purpose of disseminating knowledge of, and eliciting contributions on, ophthalmic diseases. The Editor deserves credit for his enterprise, and his undertaking is one that should succeed, if conducted in the right spirit. The first number contains much that is valuable to practitioners who do not read German medical literature. For those who can, there is little that is new. Translations and reviews like these of European journals are of the greatest value to our profession in America, as but few can consult the original.

The Editor's proof of the ignorance of the "medical profession in general" in America (see note appended to page 13) concerning strabismus and the method of curing it, is perhaps irrefragable. Let us give him a fair field to prove his assertions, submitting in a teachable spirit, and hoping we may one day have our eyes open to the truth as "known since years in the *centres* of medical knowledge in Europe." He apologizes for "lack of elegance of *diction,*" in consequence of "the difficulties of the English language for a foreigner." We would suggest that a further acquaintance with the language will convince him that the *coining* of new words, or Anglicizing foreign ones, is as unnecessary as it is inadmissible in a correct style.

We have reason to believe that the Editor's chief desire is to advance ophthalmic science in America. But we must say that many of his phrases will be entirely unintelligible to very many, on account of unknown and foreign words with which they are clothed. Many able physicians will not understand "Loupe," "Plaque," "Scales of Jäger," "c. c. a. inches," "*Pincette à ressort,*" "Operation *à deux temps,*" "Aphakia," "Emboly," "Therapy," "18–20 threads $\frac{1}{2}^{\mathrm{mm}}$," "Anemnesis," "Fascicle," while their English equivalents fully convey their meaning.

We find no notice in the Journal whether its appearance will be weekly, monthly, or semi-annually. We trust, if we miss the "brilliant original contributions," we may find copious reports of the *actual* experience of American practitioners in succeeding issues, and also that the profession will contribute liberally to the subscription list of the *American Journal of Ophthalmology.* W. F. H.

Is the Produce of Diseased Animals Unwholesome as Human Food? Being a Communication read before the Metropolitan Association of the Medical Officers of Health on the 16th of April. By JOHN GAMGEE, Principal of the New Veterinary College, Edinburgh.

In undertaking to collect information from all sources on the innocuous or unwholesome character of meat and milk of animals affected with disease, or dying from unnatural causes, I was aware from the first how very difficult it was to condense, in a connected form, and to draw satisfactory conclusions from fragmentary notes scattered throughout medical and veterinary treatises, journals, &c., which have been published from ancient times to the present day. I do not presume, and, indeed, have not attempted, to write an exhaustive essay, but rather to classify the knowledge it has been in my power to obtain, either from personal observation, or from my readings, during the last dozen years. We are very much in the same position as to facts concerning animal food, as a cause of human disease, as we were fifty years ago, or perhaps not more than twenty-five, in relation to impure air and water. It was known that people might be suffocated in a room in which they inclosed themselves to breathe the fumes of charcoal, and that human beings might be so packed as to die within a few hours from suffocation. Alarming facts were occasionally obtained of a death or deaths from foul air, but no one suspected that epidemic diseases and contagious fevers were constantly induced by over-crowding, deficient systems of ventilation, drainage, &c. It is found that the physician in active practice cannot, however careful he may be, trace each individual case to its true source. Much more is done in this direction at the present time than formerly, but the cultivators of sanitary science—the students of etiology, who aim entirely at prevention, rather than relieving and curing the diseased—have demonstrated that we must study the influence of causes *per se*, and not attempt, from an observation of effects, to determine at once how they have been induced. The history of parasitic diseases, so much enriched by the observations of zoologists during the last ten or fifteen years, demonstrates how impossible it is to adhere to the old exclusive method of studying medicine by clinical observations alone. It is with veterinary as with human medical science. We have arrived at a period when there is no limit to the studies we may engage in, with a view to obtain a complete knowledge regarding the laws which govern the origin and development of disease. It is the spirit of universal observation which must be encouraged amongst pathologists; and I have ventured to select a subject for special comment which offers a wide and untouched field for original investigation. We can refer to violent attacks of dysentery, to malignant pustule, mysterious and fearfully sudden deaths, resulting from the consumption of impure animal food; but we know not to what extent and in what way it aids in constantly raising human mortality; what per centage of deaths, if any, must be annually attributed to the constant and unchecked traffic in the carcasses of diseased animals, or the milk of foully-kept or diseased cows. My conviction is so strong, that of all food adulterations, none operate so constantly and fatally as the deteriorations of animal produce, from the causes hereafter to be noted, that I have for some years aimed at exposing the danger of infamous practices, which have assumed the form of a regular and legitimate trade, resulting from the unfortunate prevalence, especially within the last twenty-three years, of contagious cattle plagues in the British dominions.

It is an old practice, in remote agricultural districts, to save the flesh of animals dying suddenly, by bleeding before signs of life have entirely passed away. But when pleuro-pneumonia spread throughout Britain, it created great alarm. Veterinarians were consulted; they failed in curing the disease; farmers and cowkeepers were often ruined; many adopted the practice of calling in professional aid until a change of system or bankruptcy proved the only alternative. Too well have many avoided the latter! Had they not, Government would have been warned ere this, and we might probably not have to record to-day the terrific mortality prevailing very extensively amongst cattle throughout the country, which is borne silently by stockowners generally, because they know how to save and make money by permitting the slaughter of diseased animals for human food. In the city of Edinburgh there are dairymen who never knew what it was to make money until pleuro-pneumonia appeared. They originally paid £10 or £15 for a rich milking Ayrshire, which they kept a twelvemonth or more. They now pay £25 or £30 for a fat cross-bred short-horn cow, which they calculate on selling diseased within three months from entering their dairy, and they find the latter system most profitable. I have met with much active opposition on the part of the dairymen in this city, in my efforts to adopt means for the prevention of disease, and to check the traffic in diseased animals. They have gone so far as to say, "We do not want disease out of the country. It is keeping everything high."

I have no hesitation in stating, that the prevailing cattle-plagues can be prevented—that the trade in diseased animals is opposed to our agricultural prosperity—that such trade is ruinous to the nation in perpetuating foreign diseases on British soil, and that it is a powerful cause in the production of human diseases. An effectual check on the fraud daily practiced of selling diseased for healthy meat would confer a lasting boon on the nation at large and on agriculture in particular. It is in the hope that such a check may be insisted on by the medical officers of health, and by the public generally, that I lay before you this imperfect sketch on the unwholesome qualities of diseased meat and milk.

The most convenient and satisfactory plan that has suggested itself to me for the purposes of this essay, is to classify the impurities known to us as pervading animal food. They are as follows:

Firstly—Cadaveric venom and animal poisons of undetermined nature, developed spontaneously in health or disease.

Secondly—Animal poisons, well known from their effects in creating specific contagious diseases. These effects are constant, if circumstances are favorable for their development, and unchangeable; some of these poisons affect animals alone, and others both man and animals.

Thirdly—Organic poisons the result of decomposition. These vary much according to the circumstances under which putrefaction is encouraged; and they differ from the specific poisons alluded to above.

Fourthly—Mineral and vegetable poisons absorbed into the systems of animals, and which contaminate the flesh and milk so as to render these unfit for human food.

Fifthly and lastly—Parasitic animals and vegetables inducing disease in man and animals.

I.—CADAVERIC VENOM, INCLUDING ANIMAL POISONS OF UNDETERMINED NATURE, DEVELOPED SPONTANEOUSLY IN HEALTH OR DISEASE.—I might probably be more correct in using the singular, poison, rather than the plural, under this head. The effects have been so similar when observed in the human subject, that I am inclined to regard as one and the same the deleterious principle developed in an infuriated and over-driven ox, a passionate woman, the cadaveric venom of the human subject, or that of human beings or animals suffering many hours in labor, or from parturient fever. The poison depends, apparently, on the effects of excitement, exhaustion, or pain on the nervous system generally. Kill an animal in health, and often in disease, and there is no danger if the anatomist inflicts on himself a dissection wound; but this is not the case with wounds received in dissecting the human body. The conditions of death are totally different in man and animals; the mental influences affecting the one, and the perfectly quiescent and unheeding state of the latter, at once suggest how very materially the tissues may be affected in death in man, and not in the slaughtered ox, or even in the dying horse or dog.

There is a very active cadaveric venom in an animal goaded and hunted until it becomes infuriated. I have frequently spoken to butchers on this subject, and have been informed how they have suffered from cuts received in dressing the carcasses of such animals. The change in the muscular system from death under these circumstances is very manifest; to use the butcher's expression, "the flesh is black," and no part of it has the bright normal flesh-tint seen in the ox killed in a quiet state. The form of disease in man induced by eating the flesh of an over-driven ox is violent dysentery, with considerable febrile excitement. The continental inspectors of meat, who are principally veterinary surgeons, declare that the over-driving may act as an exciting cause to malignant anthrax; but there is a very remarkable difference between the effects of eating the flesh of an over-driven ox and that of an animal dying from a form of anthrax.

I shall notice this further on, but must refer to my experience of traveling diseased animals by road or rail. Within the last few years splenic apoplexy—the *sang de rate* of French authors—has appeared in some of the best farms in England and Scotland. It is the result of plethora, and in the majority of instances is unconnected with the development of a specific poison, and is therefore non-contagious. It is remarkably favored by animals being inclosed or tied up in stalls, and one of the most ready plans that I have discovered to prevent a fatal apoplexy, when the premonitory signs are witnessed, is to move the animal about and travel it on the road; in no instance that cattle have been traveled after the appearance of the first symptoms of splenic apoplexy, have I known the apoplectic stroke to occur, though several hours' journey by rail had to be made before reaching a large town, where the cattle would be slaughtered. I am inclined to think that, as in anthrax and in the over-driven ox, we have the same ecchymoses, dark color of the flesh, and other post-mortem signs, veterinarians have confounded the two conditions.

The attention of veterinarians has been frequently turned to the severe eruptions of ecthyma which occur on their arms in attending cases of difficult labor. Similar observations have been made by human obstetricians in their practice.

In the *Edinburgh Veterinary Review* for July, 1858, there is a report of an attack by which I suffered, in common with other persons, that attended a parturient cow. In considering the nature of the poison, I then mentioned that it was not only in the local secretion, but in the animal's system, that it might be found, and for the following reasons:

1*stly.* The animals which, for a succession of many hours, are exhausted by the pains of labor and the interference of men, very frequently perish, notwithstanding that delivery is accomplished. The cause of death is often spoken of as metritis, but the animals *rapidly* sink in a manner which inflammation of the womb alone can scarcely account for.

2*ndly.* The flesh of such cows has been proved to be injurious, if partaken of by men. In support of this statement I shall simply transcribe Noirot's report of a case which recently occurred in Prussia.*

> "On the 17th of June, 1856, on the estate of Grüneberg, in the district of Prenzlau, was slaughtered a cow, otherwise healthy, but which a veterinary surgeon could not deliver of a calf. On the 18th of June a portion of the meat was fried for some workmen, and the day after another portion was cooked for the servants and master of the castle. Almost all the persons who partook of the food were taken ill in from four to twenty-four hours, manifesting symptoms of violent colicky pains, with vomiting and diarrhœa. A surgeon was called, and declared that it was cholera. He dined at the castle, ate of the cow, and the day after was seized with the same symptoms as his patients. On the evening of the 21st of June Dr. Rehfeldt, of Prenzlau, was summoned to attend the sick people at the castle; they were forty in number, all having eaten of the cow. They all showed the same symptoms—abundant diarrhœa, yellow and

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* See *Annuaire de Littérature Médicale Etrangère pour* 1857. Par M. L. Noirot. Paris, 1857. Also *Medicinische Zeitung*, No. 43, 1856.

watery stools, burning sensation in the stomach, intense suffering, insatiable thirst, vertigo, cephalalgia, excessive debility, almost amounting to paralysis, pale cold face, sunken eyes, hollow cheeks, small and accelerated pulse.

"Careful investigation brought to light that none but the individuals that had partaken of the meat were ill, and no analogous affection existed about the country. It was also seen that the intensity of the symptoms in each case was in proportion to the quantity of meat that had been eaten, and the individuals that were most ill had eaten of it two days running. In no case had the first symptoms occurred in less than from four to six hours after the unwholesome meat had been swallowed, and some individuals were only attacked after thirty or forty hours. The kind of poisoning in these cases was not the result of direct action on the digestive organs, inasmuch as nothing indicated an inflammatory state of these organs. Pressure on the abdomen gave rise to no pain, not even when the colicky symptoms were at their highest. All the circumstances indicated the introduction of a poison into the blood, and this poisonous principle existed in the flesh of the cow. Suspicion fell on the kitchen utensils, but it was found that the meat had been cooked in very different ways, and the meat itself must have been possessed of noxious properties. Five persons fell ill in a dairy where some of the raw meat had been sent. One of these, a woman, suffering from chronic disease, died.

"The generative organs of the cow could not be found. The chemical analysis of the flesh gave no result. It is probable that before the cow was slaughtered, gangrene of the uterus and a putrid puerperal fever had set in. Cooking had not destroyed its poisonous principle. This instance serves to show how dangerous it is to allow diseased animals to be sold to the butcher.

"On the 26th of June, with the exception of a woman, and another, a sickly old man, who died, all were restored to health; some, however, remained for a considerable time in an enfeebled state."

3*rdly.* Although the *most common form* of parturient fever in animals is known to occur in well-nourished cows that have had no difficulty in labor, still many cases, which have been set down as cases of metritis accompanied by putrid fever, and have been considered to arise from the absorption of putrefying elements from the genital organs, are similar to those conditions of the system in which there is danger of introduction of the arm in the vagina. The carcasses of the animals that have died from parturient fever, like those of animals dying from simple protracted labor, are poisonous, and induce enteric disorder if eaten.

There is a very significant general fear of parturient cows being slaughtered as human food, which I have heard expressed by butchers; but I have known many cases in which such animals have been permitted to pass, and indeed know that parturient cows are killed like other diseased animals for human food, in England as well as Scotland. It is important to notice, that no person could tell the carcass of a cow that had died from parturient fever from that of animals even in health sometimes, and it is essential to inspect the cow, whilst being dressed by the butcher, to examine the internal organs.

In the above-mentioned article I remark, that we cannot deny a certain degree of resemblance between the effects of the element which proves irritating to the hand or arm of the physician-accoucheur and the veterinary surgeon. No doubt there is great similarity in the condition of system attendant on protracted labor in the human female and our domestic quadrupeds. The similarity is probably quite as great as between some of the forms of fever attendant on parturition, and which are proved to be contagious. As regards the human being, it has also been demonstrated that there is some similarity between the cadaveric poison and the puerperal.

This class of poisons is not due to putrefaction, and I may conclude this section of this essay with another quotation from the paper on "Ecthyma Simplex." I then said, "It is my impression that putrefaction is entirely opposed to the development of the genuine cadaveric venom. We cannot understand a material difference between putrefactive change in the body of a man and the body of a horse, still we may dissect as many horses as we like, wounding ourselves each time, unless they be glandered, without suffering. Occasionally a dissection-wound procured in dividing the tissues of an ass or horse may suppurate, but we have observed that this results generally when peculiar circumstances, such as breathing foul atmosphere, &c., have seriously affected the system of the dissector. I would rather consider the mode of death as influenced by the physiological constitution of man and the lower animals in studying the cause of the development of a cadaveric venom in the human body. The intelligence and highly-developed nervous system of man completely excludes any chance of drawing an analogy between the conditions of death in man and the conditions of death in the lower animals. But apart from this, we find that the lower animals are very frequently—almost invariably for dissection—killed when enjoying constitutional vigor and health; but this is not the case in man; and we observe that the cadaveric venom is most severe from bodies of individuals that have died of constitutional diseases, and especially *from females that have fallen victims to puerperal fever.* Death in man is preceded by morbid changes; it follows an *exhausting process,* both *mental and constitutional.* It has yet to be discovered what influence this bears on the tissues so as to render them in some way different from the structures of animals that have died tranquilly, without previous nervous excitement or prostrating diseased action."

II. ANIMAL POISONS WELL KNOWN FROM THEIR EFFECTS IN INDUCING SPECIFIC CONTAGIOUS DISEASES.—At the head of this class we have the anthrax poison; and a few remarks on anthrax in animals may not be inappropriate. It is an enzootic disease peculiar to many districts in different countries of the world. Though thus springing in special localities, it may, and does, rage as an epizootic. The causes essential for its production are the plethoric state and heat. The warmer the climate, the more common and deadly is anthrax; and there are countries, such as our own, where the disease is seen, but is rarely attended with the development of the anthrax poison. Thus the braxy in sheep is the same disease as the *miltzbrand* of the Germans, and the *fièvre carbonculaire* of the French. It renders the flesh of these animals poisonous in warm countries; in our Scottish hills braxy hams have been eaten with impunity from time immemorial. Again, the black quarter, quarter evil, quarter garget, black leg of many parts of the United Kingdom, is the malignant anthrax of France, Germany, Italy, and many other warmer countries than ours. I state this from personal observation; and remember specially seeing a young bullock carted into the Ferrara slaughter-house to be dressed and sold, condemned by Professor Maffei, and buried. The animal died from what we know here by the many names mentioned above. A jobber disinterred the carcass at night-time, and transferred the flesh in sacks, which he carried on his back a distance of a few hundred yards to a hiding-place. Next day this man was seized with gangrenous erysipelas of the back, and died in three days. This occurred in the hot summer of 1854.

It is the terrible virulence of the anthrax poison abroad that has led to the excellent organization of the slaughter-houses everywhere to be found, and to the appointment of qualified professional inspectors.

The cases of communication of malignant anthrax from animals to man are so numerous, that it is almost impossible to refer to the whole, or even to a large proportion of them, in this paper. There are, doubtless, numerous cases of this description that have occurred in this country, but they are not recorded, and have often been ill-observed, or not traced to their true cause. I have evidence of two well-marked instances in which serious disease and deaths in families have occurred in Aberdeenshire. The one case was reported to me by Dr. Keith, of Aberdeen, in 1856, and the other was mentioned to me by one of my students, Mr. John Morris, of Aberdeen. I have been informed by a most intelligent dairyman, that, several years ago, in a village in Dumfries-shire, a calf was slaughtered suffering from quarter-ill. It was eaten, and many persons suffered very severely—some died. These cases demonstrate that occasionally the anthrax poison is developed as far north as Scotland. It is doubtlessly more frequently produced in England; and on the occasion of my examining an aged cow that was slaughtered from an attack of black quarter—in London, in 1851, I was told that accidents had been repeatedly observed amongst butchers from dressing such carcasses. One man had lost his arm; another had to suffer amputation of the hand, and various other cases were alluded to. Dr. Headlam Greenhow, in a "Report on Murrain in Horned Cattle," published in 1857, says that carbuncular murrain is happily unknown in this country. This is not the fact, as occasional outbreaks of glossanthrax have occurred, and I have already stated that the great difference between carbuncular disease here, and in warmer climates, is the more constant development of an active anthrax poison in the latter. I think there cannot be a doubt as to the injurious results of eating the flesh of animals that have died of carbuncular fever, and contradictory opinions are based on observations of cases of unequal severity, occurring in different localities, and on the protecting influence of cooking, which destroys the potency of the virus.

Hübner* furnishes us with the symptoms preceding the death of two dogs that died from eating the flesh of a sheep affected with anthrax. The brain was affected, and symptoms of stupor appeared.

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* *Zeitschrift für die gesammte Theirheilkunde*, 1842.

This author alludes to a shepherd who found a dead raven lying by the carcass of a sheep that had died of anthrax, and had been apparently poisoned by eating the flesh. Dr. Vix, in a note appended to Hübner's paper, says: "Three years ago (1839) I performed a post-mortem examination of an ox that had died of anthrax; my dog licked some of the blood that had flown on the ground, and in the course of twelve hours gangrenous pustules appeared in the mouth, the head became much swollen, and the animal was only saved by great care."

Dr. Schwab, of Munich,* recorded a case in which eight families suffered from eating the flesh of a calf that had died of carbuncular fever; three deaths occurred. Coste mentions in *Omodei's Annali Universali*, for 1844, that many persons were attacked with a nervous fever from eating parts of a cow that had succumbed to anthrax. Renault observed in the department of the Nievre, in 1846, a case in which a man suffered from malignant pustule, from being stung by a fly, whilst standing near the carcass of an animal that had died of anthrax, and another individual died of the disease after skinning an ox. Mangin, in 1847, refers to pigs and dogs dying from eating the flesh of cattle that have been lost from anthrax.

In the *Lyons Veterinary Journal* for 1850, a very singular case is recorded. A cow died of carbuncular fever, and its flesh was given to several women, who cooked and ate it. Two of these persons became affected several days after with pustules on their arms, and all showed signs of malignant anthrax. One woman died at the end of a week, and the others later.

Bearing on my remark, that heat is essential to the full development of the anthrax poison, is an interesting observation by Luscan.† At a meeting of the Société Vétérinaire de Lot et Garonne, this gentleman said that he seized the opportunity to draw attention to the fact that a high temperature increased the severity of anthrax. Thus he had seen dogs eating with impunity the flesh of oxen that had died of the disease in spring and in autumn, whereas others died after eating such flesh in the hot months of summer. In commenting on this, Lafosse wrote: "Here are facts which, added to the observations made by Bertin at the Guadeloupe, and to those already very numerous and reputed in the annals of science, demonstrate how much circumspection should be used before declaring in favor or against the innocuous nature of the flesh of animals dying from carbuncular fever." M. Pradel de Castres, in a report to the Prefect of Tarn, states that dogs and magpies died after having eaten of carcasses of cattle that had perished from this disease. In the same journal from which I have made these quotations, Caussé, veterinary surgeon at Castlenaudary, records two very severe cases of malignant pustule in man, from the individuals skinning an ox which had died of anthrax. Gerlach records a case in 1852 of a man dying from eating such flesh. The same author, in his observations on Prussian veterinary practice for 1854, says that about fifty persons had suffered during the year from the communication of anthrax by eating the flesh of diseased animals; six of them died. Eleven pigs and two dogs succumbed after devouring similar meat. A very remarkable instance is recorded in the *Gazette Medical de Lyon* for the same year. A cow died of carbuncular fever, and thirty-six persons ate her flesh. Twelve of these died, and the others recovered under careful treatment.

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* *Eininge fälle von Anthrax vergiftung*, 1844.

† *Journal des Vétérinaires du Midi*, 1852.

The cases I have here quoted are in addition to many you will find in Heusinger, Delafond, and in the works of other authors on malignant pustule. It is difficult to say if splenic apoplexy may not occasionally assume all the virulence and characters of anthrax. Thus, in the last number of the *Edinburgh Veterinary Review*, it will be found that Mr. Aris, of Wellingborough, Northamptonshire, states that pigs have died from eating the offal of cattle that have succumbed in his district from splenic apoplexy.

I shall conclude my remarks on the use of the flesh of animals that have died of anthrax by the following statement:

1stly, The malady described by Continental authors as anthrax or carbuncular fever, and which attacks man and all-warm-blooded animals, occurs in Great Britain.

2ndly, The anthrax poison induces malignant pustule in man, but with a very different degree of severity in different cases. A certain temperature is essential for the development of this poison, and from this circumstance it only occasionally manifests its virulent properties in this country. This poison may act with great violence on the unabraded skin, or on being introduced into the blood by a wound, or into the stomach, especially if the flesh be raw.

3rdly, The disease in man, produced by eating the flesh, may sometimes be a diarrhœa, but more frequently a form of putrid fever, with malignant pustules on different parts of the body.

4thly, The post-mortem appearance of animals that have died of this disease are often localized in one quarter of the carcass, which may be removed, and the other quarters sold, much to the danger of human life. This indicates how necessary it is to have professional inspectors to slaughter-houses.

MILK OF COWS THAT HAVE DIED OF ANTHRAX.—Delafond says that whenever he has examined the milk of cows with carbuncular fever, it has possessed a nauseous odor, a dirty-white color, and decomposed rapidly. The slightest elevation of temperature led to curdling of the casein; allowing it to rest for six hours, red streaks appear, owing to the coloring matter of blood. One of the most remarkable facts concerning the unwholesome quality of the milk is recorded by Dr. Chisholm. It occurred in 1795, in the island of Barbadoes, in the family of a Mr. Commin, a planter, whose daughter drank the milk of a cow suffering from anthrax, and had a severe attack of the disease, which nearly terminated fatally. Gohier witnessed at Tramis the ill effects of such milk on a man who was attacked with severe diarrhœa, associated with great weakness. In 1809, five persons in one family suffered from diseased goat's milk. Calves take the disease by sucking their dams, (Desplas,) though it has been stated that an infant has been known to drink the milk with impunity. This discrepancy is accounted for by the irregularity in the development and virulence of the poison. Metzger, Lappe, Heusinger, Spinola, and Virchow assert that the milk is often poisonous, and always attended with great danger if swallowed by human beings.

CONTAGIOUS TYPHOID FEVER POISON.—This malady, the Steppe disease or Rinderpest, the cattle plague, which develops spontaneously only in Southern Russia and Siberia, spreads alone by contagion westward. It is probably the most exclusively and actively contagious disease affecting any animal; but it appears certain that the flesh is not rendered poisonous, and that human beings can eat it with impunity. The most remarkable fact connected with the disease is, that dogs having devoured the flesh of oxen dying of this enteric fever, have communicated the disease to otherwise uninfected districts. Sheep, who are not subject to the malady, are capable of carrying the contagion, and the same may be said of horses, pigs, cats, &c. The milk, and the butter made from the milk, have produced alarming symptoms in human beings and dogs.

The produce of cattle dying from the cattle plague is condemned as unmarketable, from the great facility with which the malady is propagated. The virus is so indestructible, that there are well-attested facts to prove that opening the graves of animals slaughtered years before for the contagious fever, has led to a fearful outbreak of this terrible disease. It cannot reach our country, from the limitation to its spread received by the vigilance of the Prussian and Austrian Governments. British observers witnessed this disease during the Crimean war.

ERUPTIVE FEVER POISONS.—The only malady that I need refer to under this head is the epizootic aphtha, or vesicular murrain. It is also called eczema epizootica. Foot and mouth disease, *maul u. klauenseuche* by the Germans, *la cocotte* by the French.

I need not detain you by observations on the flesh, which is deteriorated from the circumstance that animals rarely die from epizootic aphtha, unless from the violence of an irritative fever, which occasionally assumes a typhous character, as in other instances of disease attended with the presence of a blood-poison, and from emaciation and hectic. The last that I dissected was that of a yearling in a state of extreme emaciation, and it died from inanition, owing to inability to eat from extreme soreness of the mouth. The animal had not been treated, and had proper care been used to feet it on gruel and other sloppy diet, it would certainly have lived.

The milk secreted by cows suffering from epizootic aphtha varies in quality and quantity at different stages of the disorder. During the early period of the eruption the secretion is unaffected, but when the vesicles are developed on the teats, they burst in the act of milking, and the virus falls in the milk. The pain attending milking at this stage prevents the removal of all the milk secreted, and from the teats ulcerating, and the ducts being obstructed, attacks of mammitis are very common. Milk from cows suffering from this disease usually contains much pus.

There are abundant facts to demonstrate the injurious influence of such milk on human beings or animals drinking it. From my personal observations, I can state that calves die from acute laryngopharyngitis, and intestinal irritation, with marked emaciation. Pigs are readily affected, manifesting similar symptoms.

An exhaustive summary of the information published on the poisonous nature of milk in epizootic aphtha is furnished in an inaugural dissertation by Dr. Nauhiemer, (Giessen, 1860.) Sagar observed, during an attack of the disease in Moravia, (1764,) that the milk of cows induced the malady in man and animals. Similar observations were made in the vicinity of Lyons in 1811. Toggia's observations in Italy in 1818, and Mathieu's in France, led them to regard the product as innocuous. Jacob mentions a number of cases in which persons drinking largely of milk suffered severely when the malady was in the vicinity of Bâle in 1839. Jacob himself drank two large tumblers of warm milk from a cow that had sore teats and feet for five days. The following two days he took one tumbler each day, and this was immediately followed by headache, weakness in the limbs, and feverish symptoms. The mouth was hot, and there was itchiness of the skin in various parts. The symptoms lasted two days. He again drank of such milk for two days, and suffered from painful swelling of the mouth, vesicular eruption within it, as well as on the chest. The vesicles on the latter were hard and irritable. Those in the mouth broke, the epithelium fell off, and the parts healed. All symptoms disappeared in eight or ten days. Jacob saw similar attacks in a number of persons, but the severity depended on the intensity of the attack in the cows. Hertwig and two friends drank a quart of fresh milk from an affected cow. On the second day fever, tremors, headache, hot and dry mouth, and itchiness in the hands and fingers, supervened. By the fifth day the mouth became swollen, vesicles formed within it, and gave great inconvenience. Similar eruptions occurred on the hands and fingers, and symptoms disappeared on the tenth day. Lowak (1845) has recorded similar results from the use of such milk.

I shall not detain you by observations of Herberger, Hering, Falke, Krügelstein, Donné, Spinola, and others, and I may draw from my own and recorded experience the following conclusions:

1stly, That epizootic aphtha—a disease scarcely ever out of Britain since 1839—is due to the development of a specific poison capable of inducing the symptoms of the disease in man, and apparently in all warm-blooded animals.

2ndly, From the frequent deaths in calves and young pigs, I am led to the conclusion that the young are more liable to suffer severely, and it is only in early age that there is danger to life.

3rdly, The human subject is preserved from attacks of this contagious aphtha from the milk being taken some time after it is drawn, and in small quantities; occasionally, when it is boiled; and almost invariably, diluted. If the milk is swallowed pure and fresh, it communicates the disease, which is entirely similar in man and animals. The similarity extends even to the implication of the extremities, as shown by the eruption of the hands and fingers in man, as on the feet of animals.

I think it is desirable that attention be paid to this disorder by medical men. I am inclined to attribute the poisonous nature of the milk entirely to the admixture of the virus from the vesicles on the teats with the milk when drawn. The period of incubation of the disease is very short, and dairies might easily be kept clear, if it were insisted that newly bought animals should be kept separate for three or four days, that they should always be milked last, and the hands of the person who milks washed immediately after; chlorine water should be applied to the teats, and especially to the vesicles when opened. There is no doubt a remarkable scarcity of general facts indicating the dangerous nature of this milk, but perhaps this may be due to the fact that infants suffer, and any ill effects may be attributed to ordinary eruptions so commonly seen during the period of suckling.

Valorious Fever Poison.—No fact is better known than that man is attacked with symptoms of cow-pox from contact with the poison of this disease, but there is no danger to be apprehended—rather the reverse.

The flesh of sheep that have died of small-pox, though seriously deterioriated, is not poisonous. Its sale is condemned by Delafond, as any such trade favors the extension of disease.

(To be concluded in next No.)

EDITORIAL AND MISCELLANEOUS.

— We quote from our weekly contemporary, the *American Medical Times*, of August 9, the following letter from Dr. Sayre:

Sir—I have for many years past been in the habit of using picked oakum, in all cases of suppurating wounds, particularly in connection with opened joints, where the suppuration is excessive. The great number of gunshot wounds now in Bellevue Hospital, where I use it entirely to the exclusion of lint, has furnished an opportunity for a number of army surgeons to examine its advantages, and they have requested me to make the subject more generally known to the profession through the medium of your valuable medical journal.

One of the objects of lint applied to a suppurating wound is to absorb the discharge; now as most of the lint is composed either entirely or in great part of cotton, it acts more like a tampon, or a retainer of the secretions, than as an absorber.

If you will take a bale of cotton and immerse it in the river for one month, or even longer, and then remove it, you will find on opening it that the cotton in the centre of the bale is perfectly dry, thus proving that it cannot be soaked through any great thickness, or that it will not absorb moisture. So, when placed over a suppurating wound and left for some hours, it will be found perfectly dry except at the point of contact: acting, in fact, like a bung in a barrel or a cork in a bottle—to *prevent* the escape of the pus—which necessarily burrows in different directions, thus forming extensive abscesses, and adding greatly to the danger of the patient; and when removed, the pus will gush out in large quantities. Now, if you place picked oakum over these same wounds, you will find after the same number of hours, that the oakum is perfectly saturated with pus, and the wound itself almost perfectly dry and clean—the oakum acting like a siphon, and discharging the contents of the abscess by capillary attraction.

It is necessary to place under the wound a piece of India-rubber cloth, or oiled muslin, for the sake of cleanliness; and in case of much inflammation, by simply wetting the oakum in cold water, and wrapping the oiled muslin around the limb, or wounded part, so as to exclude the air, you have at once the neatest and most comfortable poultice that can be applied to it. In gunshot wounds, which go through and through a limb, particularly if made with the "Minié ball," the whirl or screw of the ball entangles in its thread the muscular fibres and cellular tissue, and separates them from their attachments for a long distance from the real track of the ball itself.

As the muscle and tegumentary tissues are more freely supplied with blood-vessels than the fat and cellular tissue, the consequence is that they begin to granulate much more readily than those other tissues, and will thus often close up the wound, and prevent the free escape of pus, before those parts have perfectly healed, and thus lead to the formation of extensive secondary abscesses. I, therefore, in all cases where no blood-vessels prevent it, pass an eyed probe through the wound and draw through it a few fibres of the oakum or tarred rope, which keeps it perfectly free, and the tar is a very excellent antiseptic, and removes all unpleasant odor.

A few fresh fibres are twisted on the end of the seton at every dressing and drawn into the wound, and the soiled piece cut off and removed with the dressings.

Another great advantage which the oakum possesses over lint, which in these times of heavy taxation is not to be overlooked, is its cheapness. Lint at the present time costs from $1.25 to $1.35 per pound, whereas the finest picked oakum can be obtained at the "Empire Oakum Works," No. 149 West 39th Street, for ten cents per pound. And if it were universally adopted in the army it would save many thousands of dollars to the Government, and I confidently believe the life of many a soldier. And no surgeon who has once used it will ever resort to lint again, particularly if the lint is made of cotton.

— A most singular case, perhaps the only one on record, of death caused by caterpillars occurred recently in the commune of Dardilly, near Lyons. A little boy, not more than eight years old, had gone into a neighboring wood, in quest of birds' nests. Perceiving one on the top of a tree, he climbed up, but in so doing shook down an immense number of caterpillars, many of which fell on his shirt, his only upper garment, and soon covered his breast, which was bare, and penetrated to his arms and shoulders. For a few minutes the child took no notice of this, but he soon felt such an itching sensation that he was compelled to get down again and run home for assistance. Upon examination, his skin appeared covered with large red spots, which were soon followed by a general swelling, then by fever, somnolency, and delirium; and, notwithstanding all medical care, death ensued in the course of a few hours. The kind of caterpillar which caused this disaster was the *Bombyx processionea* of Réaumer, a very venomous species. Botanists know that if a nest of these insects be touched, or only stirred up with a stick, the person so doing, and remaining for some time near the spot, within reach of the emanations arising therefrom, will be attacked with a papulous eruption of a more or less confluent nature, which will last several days, and be attended with violent itching. Dr. Calmell, Physician to the Hospital of Charenton, had preserved a nest of these caterpillars in a large glass phial, which was not opened for upwards of ten years. At length, the phial being accidentally wanted, it was opened in the presence of several persons, who all caught the eruption. This strange property has even suggested to several members of the Faculty the idea of using these caterpillars in cases in which it is required to subject the skin to a strong and permanent irritation. We may remark, in conclusion, that the number of caterpillars which infest the trees this year all over France is quite unprecedented—a circumstance which has called the attention of the authorities and of various learned societies to the question of protecting insectivorous birds, the only really efficacious enemies of the caterpillar.

— *The N. Y. Ophthalmic Hospital* is removed from 63 Third Avenue to 387 Fourth Avenue, corner of Twenty-eighth Street, the former residence of Peter Cooper, Esq. The Directors of the Institution have taken a lease of the building and adjoining lot for ten years, have thoroughly repaired the old mansion, and are now prepared to admit patients who wish to reside in the Hospital at $3.50 per week. About 10,000 patients have been prescribed for since its organization. It is open every Tuesday, Thursday and Saturday, from 1 to 3 P. M., for the reception of patients with diseases of the eye. Clinical instruction given each day.

The Medical Staff are Mark Stephenson, M.D., J. P. Garrish, M.D., and Marcus P. Stephenson, M.D., Attending Surgeons; Valentine Mott, M.D., LL.D., Consulting Surgeon.

A Course of Lectures on Ophthalmic Surgery will be delivered by Dr. Mark Stephenson during the coming fall and winter.

Between 3 and 400 medical pupils and practitioners have attended the N Y. Ophthalmic School during the last ten years, and received the Diploma of the Institution. Further particulars can be obtained at Dr. Stephenson's office, 383 Broome Street, N. Y.

— We understand that Prof. Horace Green is engaged, and has been during his leisure hours, for a number of years, in preparing a somewhat elaborate work on the *Nature and Treatment of Diseases of the Lungs and of their Appendages.* Having given, as many of our readers are doubtless aware, more than twenty years of his professional life almost exclusively to the study and treatment of this class of diseases, (over ten thousand cases of this nature we have learned having in that time came under his observation,) Dr. Green should possess a large and valuable amount of information on this important class of affections. A most important contribution to current knowledge may therefore be expected to emanate from his ready pen, and we would advise all desirous of adding a book on this subject to their libraries, to wait for the publication of the work here announced.

— *Russian Vapor Baths.*—An adjuvant of great importance, and powerful curative effect in many diseases of long standing, has just been added to the resources at the command of the physicians of our city. We may refer to this establishment again at greater length, in the mean time we commend it warmly to the patronage it well deserves. Particulars may be obtained from Dr. Edward Gutmann, No. 373 Fourth Street.

THE AMERICAN

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LECTURES, MONOGRAPHS AND CASES.

Moral Insanity in Relation to Criminal Acts. Article Second. By Dr. J. Parigot, late Commissioner in Lunacy of Belgium, and Chief Physician of the Establishment of Gheel; Honorary Professor of the University of Brussels; Member of several Academies and Learned Societies; Founder of a Private Asylum for Insane, conducted on the Belgian System of Free Air and Family Life, at Hastings-on-the-Hudson. *(Article First:* Monthly, Vol. XVI., No. 5, November, 1861.)

A year has elapsed since I had the honor to present some observations on Moral Insanity in Relation to Criminal Acts, to the New York Academy of Medicine. There are several reasons which, at this time, induce me to publish another article on the same subject. These are, *first*, to determine the result of the discussions of the Academy, and to show the opinions held and remarks made by several distinguished writers of this country in our medical press; *second*, to make available the advantage derived from a review of the works published by two celebrated European alienist physicians, Drs. Bucknill and Trélat: "*On Unsoundness of Mind in Relation to Criminal Acts*," by the former, and the very interesting volume, "*La Folie Lucide étudiée et Considérée au point de vue de la Famille et de la Société*," by the latter; and *thirdly*, to prepare the elements of a future public discussion, entirely professional, for the admission or rejection of the principles presented to the Academy. A decision resulting therefrom, if in favor of these principles, might possibly have the greatest influence on the legislatures and courts of law of the United States, and be, in some respect, one of the causes of a future and efficient reform in the laws concerning insanity.

As just mentioned, two works of great importance have lately come to our knowledge; that of Dr. Bucknill was published five years ago, and, therefore, some of the opinions there entertained may since have been modified; that of Dr. Trélat is quite recent. The high intents of these gentlemen are universally appreciated, and therefore I may say that if, on the one hand, I regret not to have read their works before I published mine, on the other I rejoice to be now enabled to correct some of my views, and to point out clearly the differences which still exist between our opinions. Another fact which gives me great encouragement is, that from reviewing their books it appears that we all come, though by different modes of inquiry, to the same practical conclusion, namely: *the necessity of a reform in the means employed in the medical diagnosis of insanity before courts of law, and revision of the decrepit laws concerning that disease.*

Moral insanity, as we have shown, being but an incorrect name for *diastrephia*, and an unfortunate legal *qui-pro-quo*, had attracted my attention for many years. In the year 1855 I published in the *Journal de Médécine de la Société des Sciences Naturelles et Médicales de Bruxelles*, an article entitled, *Des Diastrephies de la Volonté et des Instincts au point de vue Medical et Juridique.* But in this paper I had not in view its possible application to English or American legal procedure; it was intended to be read before the German Medico-Psychological Society, and its principal object was to point out the great fact of a morbid perversion of will and instincts in most of the cases of so-called *monomania*, *moral insanity*, and even in the *first period* of *general paralysis.* No subject was more interesting, because it concerns often the honor, life, and property of many families who are brought in difficulties by insane persons; and because parties for both accusation and defence are often at fault from want of scientific principles to rely on. Besides, it is no less certain that the laws enacted since the beginning of this century relating to civil, criminal, and penal jurisprudence of insane persons are at present behind the general progress of medical science. The great obstacles to a proper reform are, first, the obstinacy of the lawyers—at the head of which we may place the actual Lord Chancellor of England; and secondly, the unsatisfactory manner and selfish interest with which the medical profession generally treats the medico-legal questions of insanity.

At our epoch it is impossible to deny that progress, in practical sciences, is much superior to that in the theoretical ones. Compare the advancement of metaphysics with that of electro-magnetism, photography, machinery, and now, war-engines! Why is it so? Simply because *facts* are studied, and not their incomprehensible *essence* or intimate nature. But, *thought*, *emotion*, *volition*, and *instincts* are also facts: however, much of a different kind than those we find around us. Now, in consequence of such difference, the process of investigation must also differ, and the following question presents itself: *Are we logically permitted to neglect psychical causes and their relative effects in our mental faculties, and after having excluded them, only to admit the physical and physiological phenomena?* Most certainly mental phenomena are not mere abstractions; they have their laws, their natural combinations and links by which they are tied to our organism; they are submitted to our conscience, and thus form the well-established unity of soul and body; as to the nature of these facts, (in French, *l'en soi des choses*,) and their primary cause, medical men have long ago ceased from the attempt to ascertain them; the greatest number of writers have agreed that *soul*, *life*, *mind*, *disease*, *insanity*, &c., will remain essentially unknown, but that their phenomena, laws and relations fall within the real domain of medical philosophy and practice. If the *quâ re* escapes our understanding, the *quo modo* remains within our reach, and it is to this part of investigation that I intend to dedicate this present article.

I maintain, and will prove, that it is a great error to say that the spiritualistic theory of insanity is not only weak in arguments, but eminently mischievous in its therapeutical tendencies. If any one proves that a spiritualist rejects the evidence of material cause and effect on the mind, it is clear that such person is not a practical physician. But who believes now in essential diseases? Nobody; and the same fault is committed by the physician who would deny that moral causes act at the same time on our mind and body, and would, against evidence, pretend that no therapeutic means or lever can be obtained from a purely moral source. It has for a long time been the custom of psychological writers to leave students in a certain confusion of ideas about the principles they advocated. These authors confessed that in the majority of cases of insanity no pathological evidence could be found in post-mortem examinations; evident psychological symptoms that should have no counter-stamp in the organism!

This singular theory was, nevertheless, maintained by men of great talent like Esquirol; but now the best authors, and amongst them Dr. Bucknill, declare that such fact is the exception, not the rule; depending, likely, on our imperfect means of observation. It was an argument employed certainly by decided spiritualists, who sought to maintain an exclusive doctrine. But what could be now the mischievous tendencies of those spiritualists, or rather *psycho-somatists*, who only advocate moral agents to determine a change of habits, ideas, and feelings, in order to obtain a functional and material effect on the brain? In the first article of this essay we have expressed the opinion that vice might and did often take on a morbid existence in our frame, and that immorality was the efficient cause of many cases of disease. Who could even deny the influence of mind and passions to stamp on our faces certain characteristics which Lavater observed with great care, and sometimes strict accuracy? Nay, in our own experience in psychopathy, we have had occasion to remark that relation of moral cause and material effect; then again, respecting therapeutics: if medicines are so useful and effective in bodily diseases, the brain participates in that benefit also, and the effect is patent in the change worked in the mind; thus, and in the same but inverted manner, any moral rule, any sufficient motive of action, any strong determination opposing morbid influences of vice and immorality, must have also a hygienic and curative power on a diseased brain. It is well known that Leuret's moral treatment was founded on bodily pain and mental violence, instead of which, acccording to our notion, a moral treatment ought to be charitable, *bearing* and *forbearing*, in which friendship and truth are the best levers; moral pain might, in peculiar cases, be useful, but corporeal chastisement and personal aggressive violence must be considered cruel and deceptive; and in effect the reality of a moral treatment finds its proofs in the family influence employed in the *free-air treatment* of Gheel, and even in the kind discipline of a well-conducted asylum. Now, the moral treatment does not diminish at all the employment of medicines; both treatments have the object of helping the mind out of a state which may be compared to a vicious circle of causes and effects, acting on and reproducing each other. We have already said that therapeutics of insanity is neglected on account of many causes; two of them are the deficiency of medical staff in our asylums, and the neglect of moral treatment. To resume, let us say that if we cannot form a notion of disease without the notion of composition and of change of our material existence, we can also form no idea of a mental disease in which the mind is not changed in its immaterial relation with the soul. The only difficulty we experience, especially in cases of diastrephia, is to ascertain *when* the perversion of the mind (by analogy, the disease of the soul) shall have been sufficient enough to produce the material change of the brain and derangement of its functions. Curious instances of moral influences, which were, in some cases, able to prevent, and in other cases to accelerate the development of mental diseases, are found in the vast records of mental pathology.

There can exist no doubt about the human activity which animates our double nature, moral and physical; it is by it that we may account for their mutual interference in preventing or forwarding a mental disease; let us take, for instance, a simple defect of the mind, very common in commercial countries, and which at first affects but slightly our will: *the love of money, the worship of the almighty dollar.* Let us suppose that an exaggerated love of profit is not checked by the conscience of its relative value, or balanced by some other feeling or passion—it will easily turn to a sort of fixed idea. Every act and thought will soon converge to one point, *making money*, and that passion may come to such a pitch that a man becomes gradually a sort of accumulating machine, without object, feeling, or even gratification. After a certain time all the faculties of that person will be observed to be first absorbed in one idea, and gradually they will decrease in strength; health will be impaired and the organs of external sensibility enfeebled; cerebral congestions may, from mental excitement, generally turn into an alteration of the substance of that organ; nutrition becomes more and more attacked in its sources as the disease advances, and the individual dies in an asylum! Human liberty enabled, certainly, that person to oppose an excessive inclination; moral influence might have destroyed the cause and effect of this most terrible disease!

In spite of the well-founded notion that mental diseases may be the consequence of a pure moral cause, many physicians repudiate the idea that such diseases can be cured by means of a pure moral character; still, there must be the same relation in the two cases. At first sight, it appears impossible that a madman can be cured either by argument, persuasion, or coercion; the same appearing difficulty strikes in Leuret's proposition, (it was an argument *ab absurdo:*) he asked "how an error of the mind could be cured by a dose of Epsom salt?" Both these exclusive arguments, which have materialism and spiritualism for pretext, are mere caricatures of the truth; our double nature requires the moral and physical treatment of our mental infirmities; the practice of mental therapeutics teaches what sort of arguments, what kind of emotions and persuasion (for instance, that coming from the heart of the adviser,) will and shall have an effect on the intelligence and resolution of insane persons; abstractively, we do not see the difficulty of admitting that mental functions may be distracted or separated from the influence of morbid organism, since we see that although the brain is sometimes injured or partially diseased, its functions remain healthy; now, also, everybody knows that medicines cannot correct *directly* the error resulting from a bad syllogism, but it can be opposed to *Leuret's* argument that Epsom salt might remove the obstacle that indirectly obscured the intelligence. There is no doubt that sudden changes and compositions in the body do take place by means of the nervous and circulatory systems, which possess such an immense power on the human frame; and these facts take nothing from the value of medical or surgical science. Do we not see every day that an unbounded reliance and belief in God's omnipotence, or even in the natural power of man, imparts such a strength and power, that wonderful effects are immediately apparent? For instance, the Catholic Church has saints to apply to in order to cure all imaginable infirmities; a sick man has sometimes confidence but in one physician, or even in a common quacksalver; until he sees the man that *will* cure him, the symptoms grow worse; no medicines, however appropriate to the case, had effect; but, if his wishes are satisfied, the patient is seen recovering immediately. The celebrated *micæ panis* pills of *Tronchin* cured thousands of people belonging to the educated class, of the court of Louis XV.; just as, now, Homœopathic infinitesimal globules cure those who believe in their power. It is known that, after some terrific conjuncture, people's hair, from black, turns instantly white. Every medical reader is aware of the fact that an amputated man, dying almost from subsequent hæmorrhage, said to his hastening surgeon, "*Dear sir!* I am lost! I feel I am dying! All my blood is gone!" The cool answer was, "What you suppose is so far from the truth, that in one hour's time I shall be obliged to bleed you!" Here, the idea only that, instead of wanting blood, the patient had still too much of it, saved the man! Now, is it not true also, that, in some serious cases, or even in consequence of a mere deception, sudden death has been the consequence, by a rapid exhaustion of nervous power? Besides, surgery possesses in its records innumerable proofs of the necessity of favorable moral circumstances to insure success to the best-performed operation.

In fact, moral causes are so much the more common in insanity than physical or physiological ones, that Guislain attributed the great generality of mental derangements to lesions of the *emotivity;* nevertheless, he supported the *somato-psychic* doctrine of insanity. Now, considering the importance of our object, we may inquire how we are to account for several propositions of Dr. Bucknill, which appear evidently directed against some of the best arguments tending to prove the influence of body and soul in mental diseases. Moral insanity, or, rather, *Diastrephia,* we have proved to be a disease of the brain, whose moral symptoms are principally found in the perversion of volition and instincts; it affects the conscience and body in a morbid manner equal to that of mania or Lypemania. Now, vice and immorality being the most frequent causes of that disease, it is very important to know whether real insanity has been brought on, so as to darken the understanding. Why does Dr. Bucknill say that the able and learned *inventor* (Dr. Pritchard) of moral insanity was never *bold enough* to assert that immoral and vicious acts could, by themselves, be accepted as proofs of mental disease? If they were to be accepted as symptoms, necessarily physical signs of insanity were present, and it was of the greatest importance to describe them, to show their mutual relation. If this could be accomplished, we should have the conscience to have done our duty towards justice as physicians, and could leave to the law the responsibility of its human application! Infortunately, Dr. Pritchard's *invention* of moral insanity was never accepted in the courts of law of England, and seldom in those of America; that great mistake, with others arising from the jealousy and selfish conduct of some renowned alienist physicians, have been the cause of judicial errors committed by misguided judges or ignorant juries. Let us examine the case of that infortunate *Luigi Buranelli* who was hanged some seven years ago for murder committed on a man named Latham. In this trial, all parties agreed that Buranelli had been of unsound mind, but physicians of great authority entered the witness' box with that miserable self-conceit about the superiority of their opinion, and having pompously contradicted each other about the state of Buranelli's mind at the time of the commission of the crime, they mutually annihilated their influence. Science was, of course, left aside, and a mere guess left to the jury on a question of life or death!

Dr. Bucknill says, that "*supposing that an equal weight of authority was given to the evidence of all the medical witnesses, this singular trial would seem to be tantamount to the practical resolution of the following proposition: Supposing a man to be proved of unsound mind at some* *period before the commission of a crime, and to be of sound mind at some period subsequent to its commission, what is his probable state when the crime was actually committed?"*

The very learned psychopathist whose question we are *verbatim* copying evidently wishes to absolve the court and jury of the most terrible responsibility they took; he thinks the middle period was *probably* that of mental soundness, because there can be *little doubt* that men commit criminal acts after they have recovered from a state of insanity *much more frequently* than men suddenly recover from a state of insanity after the commission of the criminal act! It appears to us that such opinions rest on no scientific principle; that the explanation is of a problematical nature; and that, further, no statistic can prove such an assertion.

"*In a case like this,*" continues Dr. Bucknill, "*the circumstances of the act itself must form most important data for the decision of the jury. If the antecedent mental unsoundness was of a kind to give occasion to the overt act, and if the circumstances of the act itself were of a kind to be explained by the mental disease, there can be little doubt that the jury would decide rightly in attributing the act to the influence of insanity.* INFORTUNATELY, *in Buranelli's case, no such relations could be traced; the mental unsoundness assumed the form of hypochandriacal melancholia; the motives of the act were jealousy and revenge, for which sufficient cause had been given.* ON THIS GROUND, and on Buranelli's SUBSEQUENT SOUNDNESS of mind, the condemnation and execution of the murderer may be FULLY JUSTIFIED!!"

The theory which I have proposed, and which is supported by Dr. Bucknill, in some measure, tends to prove that such doctrine by which Buranelli was condemned and executed has no scientifical ground.

Who could pretend that a man who has been insane (especially a melancholic) cannot, under the influence of a new fit, or relapse, be prompted to commit a crime, which, in his half-lighted conscience, he is unable to appreciate? The jealousy of Buranelli is purely hypothetical. Much has been said of the burning soil of Italy and of Italian revenge, but the trial also shows Buranelli a kind and sensitive man. Nobody on earth can tell and prove that, at the moment of the act, Buranelli was not mad; but he was found of sound mind after his crime. Then, again, where is the physician that cannot admit that a *moral shock* may be the cause of a sudden recovery? If the accusation maintains her sayings about Buranelli's design, will, and resolution to kill his enemy by a cowardly and snaringful attack, was not Buranelli then also able to feign insanity? He had only to continue his delusions, and he escaped the scaffold! But no; after having shot, for a very unreasonable and really crazy motive, (the fidelity of a concubine,) he exclaimed, "*I must die! I am an assassin!*" An insane man might by chance proffer such an opinion of himself; a *murderer* would never condemn himself.

In writing these lines, we have but the desire that scientific men would give to lawyers and juries the positive means to discern insanity from crime. In this case, it appears to us that the great principle of the coexistence of moral and physiological symptoms was neglected. Besides, no description of his moral and physical symptoms was given after he was shut up in a prison. If the slightest clue of the mental state of Buranelli could have been obtained, that false theory of determining the responsibility of an insane person, by examining whether the antecedent mental unsoundness was of a kind to give occasion to the overt act or not, should be done away with. No human intelligence can tell to what particular propensity and under what sort of circumstances an insane person may perpetrate a criminal act; therefore, we think absurd and unjust the conclusion that courts should punish an insane because no discoverable relation exists between his delusion and the crime committed by him. Besides, no physician acquainted with insanity would maintain that all the circumstances of the criminal act must *always* be explicable by the mental symptoms of the insane murderer!

For all we said on this case of Buranelli, we are ready to admit that the different opinions of lawyers and alienist physicians depend much from the special point of view they take. If insanity is only to be considered as a disease which prevents *partially* the use of our faculties without alteration of our moral and physical being, physicians ought not to be consulted; for, it is just and logical to suppress crimes and punish their perpetrators. In that hypothesis, dementia hardly escapes the responsibility of its acts, and in all these cases physicians have lost their criterion that enables them to affirm the irresponsibility before the law. But if we consider insanity as the result of a diseased state of the brain affecting the mind, then we must acknowledge its destructive effects on the conscience, and declare, therefore, every *insane person* irresponsible—there is no middle point. Certainly, if law has a right to require our experience and the result of our studies, law has no right to direct our mode of investigation; and on no occasion ought we to lose sight of the only thread that prevents error. The question of insanity is one of the sort of *to be or not to be*—the times of *monomanias* and pure moral insanity are past—there is no more demi-responsibility than demi-craziness; and although Dr. Bucknill, to our great disappointment, maintains the doctrine of grades of insanity, he most masterly defines how we are to determine insanity.

By tracing the history of the case, the causes and development of the disease, and by noting and comparing with assiduous care both the physical and mental phenomena, the physician will assert his superiority in the recognition of cerebro-mental diseases.

Is it not strange that physical and mental phenomena are not forcibly required each time that justice has to interfere in insanity cases? Now, we have proposed that no medical certificate of insanity should be accepted by courts of law without a minutely described medical diagnosis. A legal diagnosis of crime has not the power of pulling down a medical diagnosis of insanity; it is just the opposite; for the first is an abstract theory, and the second a fact. Dr. Bucknill says that in the trial of *William Dove*, the diagnosis of mental infirmity was to *some extent* made; that *some extent* is not acceptable in courts of law. It was made, or was not: if it was, the legal recognition of crime, even in its most hideous features, could not infirm the fact of insanity; if the diagnosis of insanity was not perfect, was it not because both physical and mental phenomena were not described?

The legal diagnosis of crime is a blind tool, because its abstract principle requires always punishment, and that its worse feature is retaliation. Thus, a modified punishment for an insane person is a great error and a profound injustice. It is remarkable that a bad conception of what *human mind* is brings darkness in a very simple question. With the definition of mind as being the manifestation or outward evidence of the soul by organic and vital agency, it is clear as daylight that insanity must be a disease of the mind in inevitable connection with the brain; and in consequence, the doctrine of partial disease of the mind must be given up as untenable; for that which has no part cannot be partly diseased. But as physicians we have, as I said in the first part of this essay, a firm and trustworthy ground under foot: with the force of experience, derived from a vast mass of recorded instances of the special disease in question, we know that each moral symptom of insanity must have its counter-mark in the brain and body. How it is that physiological symptoms of a disease of the brain have not always their relative moral symptoms of the mind, we do not know; but what we are certain of is, that we cannot conclude, from the variety of diseased parts of the brain to the quantity of mental insanity, as making an insane person more or less liable to punishment. Really, it would be exceedingly pernicious to allow such false doctrine to go on, that judges should busy themselves in defining the kinds and degrees of mental disturbances which should be deemed sufficient to excuse the commission of crime. The legal diagnosis of crime they are able to make; the medical diagnosis is entirely unknown to them. How, then, could they appreciate the quantity or value of moral symptoms when the mind has no parts, and distinguish the bodily changes more or less advanced? Certainly to punish a madman is a monstrous cruelty: first, because human justice is not the vengeance of society, but the reform and repentance of the evil-doer; secondly, because a modified punishment is never an act of kindness and mercy to an insane person who committed a crime. If the law is unjust, it must be reformed; but, if a crime may be constructed as a misdemeanor, the insane evil-doer has no advantage in that fact, because all moral effect of punishment is lost on him.

Those philosophers or medical men who see in insanity nothing but an aberration of the organism, implicitly acknowledge nature as the only objective reality, and believe in fatality; this opinion is not prevalent, and actually the psycho-somatist theory, like the Cartesians, identify the subject and object, that is to say, the idea and its corporeal condition in the formula *cogito-ergo sum;* thus the mind is the representative of our spiritual essence in the body. If the unknown relation of those two principles is broken, both mind and body are in a morbid condition; we see on one side pure mental phenomena in connection with a diseased state of the brain, and on the other the more or less appearing condition of a diseased body. By a consequence of these principles, responsibility depends entirely on the *freedom* or *absence* of human free-will. We have already shown that free-will cannot have degrees of perfection or imperfection, because the morbid conditions of the brain and its results in the mind exclude the possibility of raising the moral power that gives it; therefore, to measure degrees of responsibility, and adapt them to the variable conditions of diseased mind, is an utter impossibility. Who could measure the degrees of mental disorder, and where should be found, in each case, a standard of health? Dr. Bucknill says, with great truth, "that a man having the knowledge of right and wrong, and in possession of the power of *choosing the one* and *refusing the other*, is rightly held to be responsible for his conduct to his God, to his neighbors, and to himself; and that a man who from any mental imperfection or infirmity is incapable of discharging these duties, cannot be considered to be in a state of mental sanity, and cannot with justice be held responsible to do that which he is morally unable to do." This conclusion is the same at which we arrive also, after having impugned Dr. Bucknill's principles! Again, in the first part of this essay, we maintained that the neglect of the distinction between *knowledge* and *power* has been the cause of all errors in the questions of monomania and moral insanity!

A great mistake of psychopathists is to confound that last moral feeling of the heart which keeps the unhappy insane person in the limits of humanity, with a real power of discrimination of right and wrong by which insane should be capable of controlling their actions; it is upon that mistake they pretend that freedom, and consequently responsibility, is not wholly interrupted. Really it is not our scope to enter into a metaphysical inquiry on such an arduous subject, and it is much more easy to combat medically such error. Let us ask one question, viz.: In such a state of the mind, is the cerebral disease interrupted or half interrupted? and because strong motives (moral restraint, or even the fear of material restraint,) will in certain measure force the patient to control some immediate result of his actions, can we, with justice, measure the quantity of resistance to evil actions he is able to raise? "Can we dive," as says Lord Denman, "into the patient's mind?" We do not see the necessity of entering again into the discussion of what is *free-will* and its *limits* in the so much diversified humanity.

However unable to discuss the difficult subject of punishment, we must venture at least to say what we think of it in relation to insanity. Now, what is really the social power to inflict afflictive punishment, especially in doubtful cases of insanity, must be subject to controversy; for experience has demonstrated that human justice is not free from judicial murders in this specialty. Can we suppose that our judgments are so perfectly just that we ought not to be glad, after having recognized our error, that the executioner had not finished his work? It is also known that jurists and legislators have not been able to adequate or balance the crime and its atonement. It is impossible to admit that the object of punishment for crimes should be an example for others; it may be compared for its results with that childish custom of noblemen of the time of Louis XIV. and XV., who hired the child of a commoner to flog him when the young Lord had committed a fault. This stupidity, extended to the great mass of people, has proved that public executions of criminals had the terrible effect of exciting the worst feeling—that of an instinctive or animal revenge, instead of the expected fear. Now, again, if punishment ought to be grounded entirely on moral penance and satisfaction for a public outrage, and on the repentance and amelioration of the culprit, what sort of punishment, even modified, can reach the insane person *even if ever so little crazy*?

(To be continued.)

On Phosphoric Acid. By John C. Peters, M.D.

In the present article I propose to give merely the experience of those who have used this remedy most frequently in the diseases against which it is regarded as very useful. No attempts will here be made to theorize about or explain any of the results which have been supposed to follow its exhibition. In a future article its effects upon the healthy subject will be carefully elaborated, and a comparison instituted between its actions on the healthy and those which it evinces in the diseased.

In Typhus and Typhoid Fevers.—In the course of twelve years the celebrated Dr. Huss, of Stockholm, treated 3,186 cases of these fevers, in conjunction with Professor Malmsten. As is well known, he relied mainly on the mineral acids, and of phosphoric acid he says: "It is the mildest of all the mineral acids employed in medicine, and approaches in some respects the vegetable acids; its use may be continued longer than other acids, without acting injuriously upon the digestive organs, and it never injures the teeth." A very extensive experience induced him to believe that the phosphoric, besides the effect of acids in general, possesses something peculiar to itself; a more tonic, or renovating, or regulating influence on the central parts of the nervous system. This power he thinks it must receive from its base, *phosphorus*, in the same way that muriatic acid retains the special power of chlorine, or more evidently still, arsenious acid that of arsenic, or iodic acid, that of iodine. In the treatment of typhus fevers phosphoric acid hence, he assumes, acts partly as an acid, and partly from its containing phosphorus. His experience led him to place this acid in the first and most eminent rank of all the remedies he had tried in treating these fevers, both on account of the general benefit arising from its use, and the few contra-indications against it. In Sweden it is the remedy most commonly employed in the first stage of typhus, occurring either in the abdominal, petechial, or an intermediate form; no symptom from the gastric organs contra-indicates its use; the tongue may be furred or clean, or bright red, or its epithelium peeled off, or its aspect natural; the abdomen and epigastrium may be tense or not, tender or non-sensitive; there may be diarrhœa or constipation; it will prove of service in all these conditions. It is only in *bleedings* from the intestinal tube that it may have to be aided, by injections of a weak solution of nitric, sulphuric, or muriatic acid. Neither is it contra-indicated when there is a catarrhal affection of the larger air-tubes; but as soon as it becomes capillary other remedies are required; the same may be said when pneumonia is present. Phosphoric acid appears to be less powerful and useful than the muriatic, as long as the pulse continues quick, full, and more or less tense; but in cases in which the pulse has become weak and small, or was so from the beginning, it is thoroughly indicated. Congestion of the brain and delirium *fuoribundum* no more contra-indicate the use of this acid than do undisturbed intelligence, drowsiness or stupor; but should the congestion be considerable and the delirium very violent, other means may have to be added or preferred. Nor does the state of the skin offer any obstacle to its use; it may be dry and hot, soft or perspiring, or the seat of eruptions or not; but when the petechial eruption is of a bluish hue and ecchymotic, dilute sulphuric acid is to be preferred. From what has been said, Huss thinks it is evident how extensively phosphoric acid may be relied upon; cases in which it may be given being the rule, those in which it is inefficient or injurious being the exception. He uses the *solutio acidi phosphorici* of the Swedish Pharmacopœia, containing 1 part of glacial phosphoric acid to 4 of water; while the dilute acid of the English contains about only 9 parts of phosphoric acid to 91 of water. Huss gave 10 to 15 minims every second hour; while Wood recommends from 10 minims to a fluid drachm per dose, largely diluted with water; I often give from ½ to 1 fluid drachm per dose, and have never noticed any bad effects; Pereira recommends from 20 to 60 drops. Huss considers *muriatic* acid more useful when there is congestion of the brain, with or without delirium, the pulse being not only hard and full, but also more or less tense; this is often the case during the first four or five days of the fever, but under the use of the hydrochloric acid the pulse soon becomes lower and weaker, and with this change the phosphoric acid is indicated. In the second stage, marked by sinking of the strength and decreasing power of reaction, delirium mite, or some degree of stupor, frequent, very weak and small pulse, dry tongue, with or without diarrhœa, dry and burning hot skin, tendency to passive congestions, &c., phosphoric acid is as useful as in the first stage; Huss treated a great many cases with no other remedy, but sometimes camphor, ammonia, or musk were required in addition.

Consecutive Fever of Cholera.—Dr. Dysdale gave it in one case where there were stupor, difficult speech, deafness, and slow pulse; in another case there was some rolling of the head, full and rapid pulse, some sighing, semi-stupor, contracted pupils, tongue furred and moist, delirium, and yellowish diarrhœa; in a third case there were frequent whitish stools, vomiting almost every hour, white tongue, quick pulse, pale face, sunken eyes, and warm skin; in a fourth case, on the 4th and 5th day of the consecutive fever, there was great restlessness, semi-stupor, sunken countenance, yellowish diarrhœa, &c.

It will be seen from the following experience that this remedy is not as inefficient in hæmorrhages as Huss would lead us to suppose.

Hæmorrhages.—A delicate lad aged 8 was left with cough and irregular paroxysms of fever, after suffering with measles and scarlet fever in quick succession. He improved during the summer, but in the fall of the year commenced to have frequent and profuse bleedings from the nose; in the course of the winter all the signs of morbus maculosus Werhofii were developed, marked by petechiæ upon the skin and mucous membranes, and hæmorrhages from the bowels, nose, mouth, eyes and skin; the patient, of course, became excessively debilitated; his countenance was sunken, eyes dull, and voice weak. All kinds of tonics, analeptics, and roborants had been used without avail, when phosphoric acid was tried. Ten, fifteen or twenty drops were given every one-half hour, of a solution of one part of the glacial acid in seven parts of water. The recovery was rapid. Profuse hæmorrhage from the nose and great debility were removed in another case, in a woman aged 60.

Metrorrhagia.—A delicate woman was attacked with hæmorrhage after an easy delivery; she was relieved with difficulty, and a violent fright brought back the bleeding on the sixth day; the usual remedies seemed unavailing until the patient was utterly prostrate, with a scarcely perceptible, trembling pulse; difficulty of speech and hearing; cold sweats; the skin was very cold, and blanched. Phosphoric acid, one part to six parts of water, was then given in ten-drop doses every one-quarter hour, followed by speedy return of warmth of the body, cessation of the cold sweats, and a satisfactory restoration. The physician who reports the case had often found it useful in asthenic bleedings from the mouth, nose, and rectum. Huder thought it very useful in passive and exhausting cases of menorrhagia, and in scorbutic hæmorrhages.

Hæmoptysis.—In several cases of profuse bleeding from the lungs, Dr. Schneider found this remedy useful; he gave table-sponful doses of a solution of one drachm of glacial phosphoric acid in six ounces of decoct. rad. althæ., and two ounces of syrup of raspberries. One patient was obliged to use two ounces of the acid, but then remained perfectly well, although previously he had scarcely escaped an attack longer than two weeks at a time.

Mucous Fluxes.—Sundelin relied upon it frequently in chronic blennorrhœas of the urinary and genital organs.

In Phthisis.—Lentin thought it useful in consumption, and believed that it lessened the quantity of the expectoration, removed its offensive character, and diminished the night-sweats. In a very advanced case of phthisis it diminished the sweats, expectoration, and *fever.* The doses used were fifteen, thirty, and forty drops of the dilute acid every three hours. Goden thought it more useful against the *hectic fever* than the other symptoms of phthisis. I have used it frequently and successfully in the latter stages of severe influenzas and tedious coughs; it restores the strength of the patient rapidly.

In Scrofula.—Balman states that he has seen phosphoric acid exercise a very beneficial effect in a large number of cases, and he does not hesitate to assert that it is in no degree inferior to cod-liver oil, iodine, and baryta. Its effects are sometimes very marked in obstinate cases of *strumous conjunctivitis;* it not only removes the attacks, but prevents their recurrence. He gave from five to twenty drops per dose. Thinks it acts not only as a tonic, but exerts some specific influence upon the blood and system generally.

Diphtheria.—In two cases, in children, aged about four years, no other remedy was used than dilute phosphoric acid, one drachm in a tumbler one-half full of sweetened water, and used as a common drink; from two to four such potions were used in twenty-four hours; the diphtheritic patches covered both tonsils, and more than one-half of the uvula. The patients were comparatively well in four days.

Caries Scrofulosa.—A scrofulous and delicate lad aged 16 was attacked, in consequence of a severe external injury, with caries of the bones, which, in the course of four months, attacked a large part of the tibia, the upper portion of the fibula, the patella, and lower portion of the femur. There was a proportional destruction of the soft parts; the patient was much emaciated; had regular paroxysms of hectic fever; pulse quick; night-sweats and irritative cough. He also had pains in the other leg, and in various other bones. Phosphoric acid was given, commencing with a solution of two drachms of the glacial acid in ten ounces of water, in table-spoonful doses, every three hours, gradually increased to one-half ounce in the same quantity of water; local injections of the remedy were also used. This treatment was continued for eight months with few and no important modifications, and a cure resulted; the improvement commenced very quickly.

Caries.—A woman aged 60 was attacked with phlegmonous erysipelas of the right forearm, followed by suppuration along the course of the tendons; the fingers were stiff and contracted; two small openings discharging offensive pus were found on the back of the hand, and one near the olecranon process at the elbow-joint. These openings were enlarged, much pus was evacuated, and the bones of the wrist found carious. Thirty drops three times a day were given of a solution of six drachms of dilute phosphoric acid in one-half ounce of water, and one ounce of syrup of raspberries, and a weak solution was injected into the wounds. Another abscess formed on the back of the hand; in ten days it was opened, and the phosphoric acid increased to tea-spoonful doses. In the course of three weeks the openings on the back of the hand closed, but another had to be made in the middle of the forearm, from which much pus, coming from the neighborhood of the elbow-joint, was discharged. Injections of one part of dilute phosphoric acid in two parts of water were frequently thrown into the sinuses, and the internal doses increased to two tea-spoonsful. The patient's general health improved, and all her functions were well performed; at the end of six or eight weeks she was comparatively restored. The military surgeon, Medel, used it successfully in a case of caries of the ribs, both as an injection, and internally, in doses of ten, fifteen, or twenty drops of the dilute acid; also in a case of caries of the elbow-joint, occurring after small-pox, and in a third case of caries of the femur; the remedy was used in injections, and internally. It was also found exceedingly useful in caries occurring after severe felons. Dr. Sander used it successfully in cases of caries of the olecranon process, and in one of the toes, occurring after a frost-bite. Against caries of the teeth it has been used mixed with myrrh. Wood says, as a local application, it has been especially recommended in *caries*, in which it corrects the fœtor, dissolves and aids in the separation of the dead portions of bone, and otherwise favors the healing process. I have used it very successfully in several cases of felon in combination with morphine; the relief was speedy, and cure rapid.

Incipient Spachelus Senilis.—A dyspeptic man aged 34 had great coldness of the fingers, with a corpse-like, and, at times, livid appearance of the skin, with pains, especially when warm in bed; his appearance was cachectic, without excessive emaciation; he perspired profusely and easily, so that he often had to change his clothes twice a day. His fingers were always cold, and felt doughy and hollow; they were sensitive to touch, and pitted on pressure; the roots of the nails were raised and knobby. The toe-nails were similarly, but more slightly affected. The nail-phalanges were knobby, and partially destroyed, and portions of the skin which remained were brittle, hard, and as if dead or mummefied. The patient could bear excessively large doses of arnica, angelica, Peruvian bark and camphor, with little or no general effect. Among the remedies used, phosphoric acid seemed most useful, and finally was given in very large doses; the dead and mummefied ends of the fingers were gradually cast off, and a cure followed; he used nine ounces of phosphoric acid in the course of six weeks. The toes also recovered.

In Cancer.—In cancer of the womb it removed the offensiveness of the discharge, and the colliquative sweats. Hake, of Malsond, corroborates the above experience of Lentin from his own practice. Wood reports that it is said to have proved beneficial in offensive cancerous ulcers.

Nervous Affections.—Sundelin regarded it with favor in spinal irritation and hysterical affections, especially if there was more or less vascular excitement. Richter used it with confidence against spasmodic menstrual affections, and in spasmodic affections and congestions occurring after suppression of the menses, or during change of life. Wood says it has been supposed to possess the power of greatly reducing vital irritability, and has been employed more or less successfully in hysteria and convulsive disorders.

Facial Paralysis.—In the train of small-pox, which had occurred 20 years before, followed glandular abscesses in the neck and behind the ears; when they healed a complete paralysis of the right side of the face was left. Finally phosphoric acid was prescribed for some other troubles, coupled with a scorbutic state; the patient, a lady, was now 36 years old. Soon after commencing the acid the numbness and coldness of the paralyzed side of the face, which had persisted unchanged for several years, was replaced by a sensation of natural warmth for the first time, coupled with some turgescence and redness of the parts; difficulty of swallowing was removed, and the patient regained some control of the orbicularis oris muscle. The doses were 10 drops, four times a day, gradually increased. The same effects were produced in three several experiments, continued for four weeks at a time, until there seemed a rational hope that the paralysis would be entirely removed; but the occurrence of derangement of the stomach led to a cessation in the use of the remedy.

Impotentia Virilis.—The acid cured a case of impotence apparently caused by the excessive use of sugar of lead. In another case of impotence, 12-drop doses of the dilute acid, three times a day, quickly effected a cure; debilitating night-sweats were also removed. Kopp relied upon it with great confidence in cases of debility remaining after severe gonorrhœas, in irritability and sensitiveness of the testicles, in varicocele and excessive relaxation of the scrotum; he supposed that it exerted great and specific curative powers over some diseases of the prostate, seminal vesicles, testicles, bladder, kidneys, and spinal nerves. It seemed to give tone and remove irritability; he used from 12 to 16 drop doses four times a day.

Case 3.—A young man, addicted to onanism from his youth, who had several pollutions every day and more at night, became very much debilitated in body and mind, and exceedingly dejected in spirits; he was ordered a nourishing diet and active exercise to the point of fatigue in the open air daily, and 1 tea-spoonful three times a day of a solution of 1 ounce of phosphoric acid in 1 ounce of syrup of raspberries, and 6 ounces of aq. rub. idaei. In the course of four weeks the pollutions had lessened considerably, the patient became more cheerful, his complexion more fresh, and his muscular power much increased. The doses were increased to 1½ tea-spoonful, and a cure was effected; at least, the discharges occurred only about every fourteen days. Behrends had much confidence in it in cases of impotence.

In Renal Affections it has been used with a view of correcting *alkalescence* of the urine. Bergelius used it against *phosphatic* deposits, in doses large enough to produce purging, after which the urine rapidly became acid, and deposited lithic acid sediments. Balman found it more useful in cases of phosphatic disease than nitric, muriatic, or acetic acid; it gave tone to the stomach, and diminished the quantity of ropy mucus. Wood says its property of dissolving phosphate of lime out of the body has led to its employment in cases of phosphatic deposits in the urine, and in ossification of the valves of the heart and blood-vessels, in the hope that it might dissolve the abnormal bony matter and calculous formations within the body; in the urinary affections he thinks it may operate beneficially. Dr. Sutherland gave it successfully in the case of a boy aged 9, with frequent inclination to pass water; some pain in the back; could not retain his urine well even in the daytime, while the *incontinence* during sleep was complete.

He was well in less than three months. Dr. Chapman has given it with prompt effect in cases of *milky*, phosphatic urine in children.

In Diabetes.—Paris thought it allayed the thirst so common and excessive in this disease more effectually than any other acid drink.

In Dropsy.—Waring says it has been employed as a tonic in purely chronic and asthenic cases.

In Jaundice and Bilious Affections.—It has been recommended in these disorders by Caleb Miller; he prescribed one drachm in a pint of water, and allowed the patient to use it as a common drink; he says it soon produces increased discharge of urine, and the bilious deposit passes away. I have used it repeatedly, and with great success, in chronic bilious affections, marked by more or less pain or soreness in the region of the liver, constipation, often very obstinate, yellowness of the skin and eyes, coupled with dyspeptic and nervous symptoms. In one case, a lady, with sallow complexion, almost permanently heavily-coated tongue, pain and sense of swelling in the region of the liver, with great distention about stomach and along track of colon, with chronic costiveness, was more perfectly relieved in the course of a few days from taking dilute phosphoric acid, than she had been for three months. A gentleman with very similar symptoms was very much better of his dyspeptic and bilious symptoms while using phosphoric acid; his bowels in particular became quite regular, his kidneys acted better, he was stronger and brighter, his complexion fresher, and he was much less hypochondriacal. I have memoranda of two other similar cases, and indistinct recollections of several more.

In Cardialgia.—Dr. Todd states that he has used it with excellent effect.

Hæmorrhoidal Pains.—A man, aged 40, suffered with the most violent pains in the rectum for hours after each passage from the bowels, even if it was soft or fluid; these pains proved rebellious to all treatment until phosphoric acid was given for an aphthous condition of the mouth; the pains in the rectum were relieved long before any improvement in the state of the mouth was produced. This experiment was repeated frequently with the best results.

A New Method of Lithotomy in the Female, which secures a perfect Recovery, and the Natural Power of Retaining the Urine. By Robert Nelson, M.D.

Before describing my operation, I deem it proper to say what led me to its adoption. Previously to the case which is the subject of this communication, I have had to attend to six cases of calculi in the female. The first four cases, one in a child about nine years of age, and three adults, were operated on in the mode of the old-established operation—that is, by an incision through the urethra and neck of the bladder, on the left side: on the left side, because of the facility it gives to the use of the right hand of the operator, and for no other reason. In this operation, and the cure of the wound, none of those symptoms occur that more or less follow lithotomy in the male. But the sequel is quite different. In the case of the child, a dribbling of urine continued for one year; after that period she gradually and quite recovered the power of retaining her urine. One of the adults suffered from this distressing accident, especially when she was up and about, for quite a year, and then regained the lost power. Another of the adults was also incommoded in this way for a year, when I lost sight of her, and do not know what was the ultimate result. The other, the fourth adult, recovered the retentive power shortly after recovering from the operation. So it is, only one of the four had an early and perfect recovery; two got quite well in the course of time, and one, probably, continued infirm. These cases, which I believe did as well as those in the hands of other, and able, surgeons, determined me to try dilatation and crushing of the stone in the subsequent two female cases that came under my care. They were both old women.

Mrs. M., about sixty-five years of age, rather fat, suffered much from calculus. The urethra was easily, but not over, dilated; the stone readily cracked into scales like the broken shell of a hazel-nut; a few irregular and sharp-edged pieces came away, and others by a repetition of the operation. However, those that remained kindled up such high vesical inflammation and pain, that she refused to submit to new attempts for their destruction and removal—she died. This calculus was an oxalate, concreted in spherical layers, slightly adherent over each other, but the individual broken scales were very hard and sharp-edged at the fracture. The other case was in an old woman also, over sixty years. The calculus was alternately of the uric and phosphatic kind. After dilating the urethra, it was crushed with more or less difficulty, producing much less aggravated symptoms than in the former case. The treatment was quite protracted, and she never recovered satisfactorily.

I now take the liberty of digressing a little to give my opinion on two subjects, founded on an experience of 69 operations of lithotomy; 64 in the male, and 5 in the female: 1*st*, Dilatation of the female urethra, which is easily effected; but, when carried beyond a certain limit, the complete contractility is not recovered, and subjects the patient to more or less dribbling away of the urine—a serious calamity. 2*d*, Lithotrity, of which I have seen a good deal in Europe. It is an inadmissible operation in all cases in which the stone is oxalatic, in many of the uric, and in a few of the hard crystalline calcareous concretions. In any case, the operation must be repeated, sometimes to a vexatious extent; and often there is left behind a fragment to serve as a "nest-egg" for a future growth. Nor is it an operation free from fatal termination. The cases must, of course, be selected—that is, to take only such as are soft or friable concretions, and a bladder free from saculations and ulcerations; for in the latter state of the bladder the fragments have an obstinate tendency to bury themselves, more or less, in the mucus and granulations in the viscus, and thereby set up great irritation. Of the numerous cases of lithotrity I have seen, in the hands of others, I have been unable to discover that it possesses any advantages over lithotomy; but I have seen much to deprecate and regret. The only excuse or recommendation I can appreciate for its employment is, that it does away with the dangers incidental to the large cutting requisite in lithotomy, and the great mortality that follows the latter in the practice of *some* operators, but which does not occur to a *few* who are masters in the art. It is not every surgeon, however perfect he may be in anatomy and erudite in surgery, that can operate well—he overdoes or underdoes something which makes all the difference, and tells in the result.

It is time to come to the case which is the subject of this communication.

Mrs. G. W. R., thirty years of age, mother of two children, the last four years old, has suffered slightly for ten years, at times, in urinating. Four years ago she came under the present fashionable treatment for uterine disease—such as leeching, scarifying, causticating, &c., of the os uteri, without relief. Since last December her suffering increased, and prevented her from going about, and in January she had to keep her bed nearly all the time, to avoid the severe paroxysms that exercise would induce. In the early days of August it was discovered that her sufferings were due to a calculus in the bladder. She then came under my care. It was evident that the only remedy that could relieve her was the removal of the stone. The question to be considered was, what method would answer best. Dilatation of the canal and lithotrity had previously disappointed me; besides that, the state of her bladder was such—exquisitely sensitive, ulcerated, and the urine passed was thick with ropy mucus and pus—that crushing of the stone into fragments, many of which would remain behind, and so increase the actual disease of the bladder as to render such an operation dangerous, that lithotrity could not be thought of. There remained but lithotomy to be tried; but, looking back to the risk of losing the power of retaining the urine should the sphincter be divided as in the usual operation, I decided to avoid this serious accident, by not interfering with the sphincter, but to enter the bladder through the vagina, beyond the sphincter. Accordingly, on the 6th August, having administered chloroform, the bladder slightly injected with water, and a staff introduced through the urethra, the knife was thrust through the roof of the vagina in the mesial line, and carried about an inch and a half towards the uterus, making an opening of sufficient size in the dilatable part of the bladder to admit the common lithotomy forceps, which were readily introduced, and the stone at once seized and slowly drawn out. The stone being very porous and friable, a portion of it was crushed in the forceps, and had to be clawed out, and the finer particles washed away by injections of tepid water. The next step was to close the lips of the wound neatly and exactly, and thus to retain them. This was effected by five sutures of common flax thread, as more simple, fitting better, and quite as effective as the wire material. A No. 12 female catheter, with two large fenestræ, armed with a shield, to prevent its entering too far into the bladder, was introduced, and retained *in situ* by an elastic cord. The stone was $1\frac{3}{4}$ inches long and $1\frac{1}{2}$ thick, studded with very rough eminences; it was very porous, and of the phosphatic kind.

All her previous distress vanished, of course; passed the remainder of the day well; slept well that night, and the same for the subsequent time. The catheter becoming plugged with tenacious mucus, had to be withdrawn every two or three hours for a couple of days, to clear it. The bladder then recovered rapidly, and the mucus diminished. On the sixth day the sutures were cut and removed, the wound being quite healed by the "first intention." On the seventh day she got up to her meals with the rest of the family, and on the tenth day my attendance ceased. From the first to the last, not a drop of urine escaped through the wound into the vagina. She has continued perfectly well ever since, going about visiting her relatives, in a state of comfort and happiness unknown to her for a long time past.

I am aware of the saying that "one swallow" does not make summer, and that there are those who will say that this was a "lucky case;" and that it will often be followed by a vesico-vaginal fistula: true—in the hands of even well-informed surgeons, but who do not possess that mechanical ability which is indispensable to a good and successful one. However, I am satisfied that in the hands of the latter there can be no excuse why every case should not turn out as well as this one. I believe that my experience entitles me to offer an opinion—that of recommending this mode of operating on the female as superior to anything hitherto in use, and as one as nearly perfect as can be hoped for.

I have omitted to mention those minute and numerous details that are essential to be observed in and after the operation, because I merely announce the fact to the consideration of experienced and capable surgeons, and who stand in no need of those dogmatical details that necessarily enter into elementary books on surgery. On a future occasion I may venture to write a special article on the operation in both sexes; state something regarding the true shape of the male bladder that I cannot find in books; say something about the great faults I have noticed in the mode of using the forceps; why it is that much difficulty is experienced by *some* operators in seizing the stone, and how it can be caught, by a right use, in the first attempt to lay hold of it, whether the bladder contain fluid or be empty.

New Remedy for Cholera. By Dr. HONIGBERGER. (Translated for the MONTHLY.)

It would be impossible to collect, within the pages of an ordinary octavo volume, the remedies which have been proposed for cholera, both by those who are connected with scientific medicine and by empirics. We find in *Cosmos* a notice of still another contribution to the list of cholera-specifics. Dr. Honigberger, of Calcutta, having acquired quite a reputation in the treatment of this disease, announces that "inoculation with the *infusion of quassia* cures almost infallibly even the most desperate cases, and that he has employed it in thousands of cases. His *modus operandi* is as follows: A puncture is made into the left arm, and, as soon as blood appears, from three to five drops of the infusion are allowed to fall on the puncture. The blood coagulates quickly, and a bandage, which must be kept moist, is applied. For cramp in the lower extremities an incision is made in the calf. Cold water or sherbet should be used as drinks, and sometimes a douche of cold water is employed on the body and head, since quassia produces great heat in the circulation." Dr. Honigberger has applied for the Breant prize. In reading the account of this treatment for cholera, one finds it difficult to conclude whether its originator is trying to deceive others, or is himself an egregiously humbugged man. L. H. S.

Poisoning by Morphia, and the Search for Morphia in the Urine. By M. Bouchardat.

In this interesting article, the eminent Professor of the Faculty of Medicine at first recounts all that he has said when he treated of the physiological action of narcotics in general; after the first stimulant action on the nervous system, which resembles that produced by coffee, there follows a depressing action, whose clearest symptom is sleep. It resembles, in its essential characters, physiological sleep; but if the dose of morphia or of the morphia compound is increased, sleep attacks the apparatus of organic life, and, as the apparatus of respiration and circulation should always be awake, it follows that if sleep attacks these, life is extinguished. This is precisely the *modus operandi* in poisoning by opiates.

Six or eight hours after the ingestion of the morphia compound usually elapses before this general sleep occurs, if nothing has been taken to oppose it. Of course the poisoning is still more rapid if the morphia has been taken in the evening before retiring to bed, or if it be taken in the morning. Admitting this theory, the therapeutics of poisoning by opiates is both rational and simple. Every effort must be made to prevent physiological sleep, because it always precedes the sleep of organic life. To attain this object, the patient must be kept awake by forcing him to walk, beating him with switches, and, if necessary, applying the *Mayor's hammer.* Coffee then should be administered, as has been recommended for many years, in very large doses, made with from 50 to 100 grammes to 500 grammes of water, and this should be taken without sugar, in order that it may be more quickly absorbed.

It is sufficient that the patient should be kept awake for twelve hours, or, at most, eighteen hours. This time will be sufficient for the elimination of the morphia by the urine. This can be made certain by testing the urine as the patient voids it from time to time, by the aid of ioduretted iodide of potassium, which Bouchardat considers a very delicate reagent. We need not fear adding it in excess; when the urine gives brown flakes, morphia is not all eliminated.

Bourchardat considers it prudent to prevent the first sleep which follows the poisoning, in order to be sure that the respiration and circulation are normal. In adopting this treatment of poisoning by opiates, it is not necessary to reject other medication. Thus it is very important to recur first to emetics, in case the poison has just been taken. Emetics not only enable us to remove a portion of the poison before absorption has taken place, but they serve to keep the patient awake.—*(Rep. de Pharm.)* L. H. S.

Examination of the Urine in Disease. From the French of BOUCHARDAT.

A chemical examination of the urine will frequently clear up all difficulties in the diagnosis of a case, and Bouchardat has arranged the necessary agents for such an examination so as to make the latter easy to the common practitioner. The principal agents employed are heat, nitric acid, tannin, lime, and an ioduretted solution of the iodide of potassium.

1. *Heat.*—A little above 100°; the urine becoming turbid, will separate albumen in the form of clots or flakes. But it must not be forgotten that every specimen of urine which becomes turbid under the agency of heat is not necessarily albuminous; hence we must employ,

2. *Nitric Acid.*—Add some of this acid carefully to the urine. If albumen be present, flakes will be deposited. An excess of acid will dissolve the flakes. Any urine that becomes turbid under the influence of heat, and renders a precipitate under the action of nitric acid, contains, beyond all doubt, albumen.

3. *Tannin.*—A solution is made by adding 200 grammes of water to 10 grammes of tannin, and 10 grammes of ether are then added to preserve the solution. The action of this reagent cannot be relied upon, since the solution of tannin will produce an abundant precipitate, if soup, rich in gelatine, has been taken shortly before the analysis.

4. *Lime.*—This detects admirably the sugar of diabetes. Fifty

grammes of urine, and two grammes of lime, being boiled together in an assay-bottle, will give the color of caramel, more or less dark, according to the quantity of sugar present. The quick-lime is slaked with water, and then introduced into a flask which has a tight cork. If 50 grammes of urine are not colored when boiled with 2 grammes of lime, then two grammes more should be added. After the mixture is boiled again, if no color appears, it is well to test the lime. For this purpose, a half tea-spoonful of starch-sugar is poured into the flask. On boiling, if the urine should then be freely colored, we have proof that the lime had been properly calcined, and that the urine contained no sugar independent of the starch-sugar which had been added.

5. *Ioduretted Solution of Iodide of Potassium.*—This is prepared by dissolving one part of iodine and one part of iodide of potassium in fifty parts of water. This solution will communicate a chestnut-brown color to urine containing sulphate of quinine or any other alkaloid likely to be administered in therapeutics.

These are the reagents which it is well to recollect in order to dissipate a doubt, and to confirm a diagnosis.—(*Jour. de Chim. Med.*)

L. H. S.

QUARTERLY REPORTS ON MEDICAL PROGRESS.

REPORT ON PHYSIOLOGY.

By W. Sharpey, M.D.

(Presented to the British Medical Association, August 8, 1862.*)

The last quarter of a century has been so prolific of scientific inquiry, and so fruitful in discovery, that it would be futile in me to attempt anything in the nature of a connected history or systematic exposition of the subject before us. I can only endeavor, out of the wide range of topics which present themselves, to select such as seem best adapted to characterize the scope and aspect of recent physiology, and more especially to illustrate improvements in method, extension of acquired knowledge, and revolutions in doctrine. I could have wished to present a view of these subjects in special relation to Medicine, but this I must leave to a future occasion, and to some more able expositor.

In contemplating the operations of the animal economy, the mind is naturally first drawn to the evidence, everywhere manifest, of purpose

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**Medical Times and Gazette*, August 16th, 1862.

and contrivance, of ends to be compassed and means provided for their fulfillment. It is, accordingly, no wonder that ever since the time of Galen's famous treatise "*De Usu Partium*," the uses or functions of the organs of the animal frame should have formed a main subject of study and reflection; and, as you well know, it is a part of physiological study by no means yet exhausted. But intelligent inquirers soon also took up the investigation of the processes of the animal system with a view to their rational explanation. Phenomena were scrutinized, as to the condition of their occurrence, their succession, and mutual dependence; they were referred to the operation of certain general properties and peculiar forces, recognized as belonging to the living body, and efforts were made to find out general laws to which the individual facts might be subordinated.

These labors have been crowned with no small measure of success; and—thanks to the advanced state and happy application of the collateral sciences—many phenomena of a purely physical or chemical nature have been satisfactorily referred to their true causes. If problems yet remain (and there are many such) which have baffled all attempts at physical explanation, it must at least be counted as no small gain that we no longer seek their solution in the agency of imaginary entities, clothed with mystical attributes, like the Archæus of Van Helmont, the Anima of Stahl, and the Vital Principle of later theorists, nor vainly strive to square them to the dogmas of some dominant vito-chemical or dynamical system.

Causes of the Advance of Physiology.—During the period which we propose to keep in view, viz., the last twenty-five years, physiology has undoubtedly advanced with accelerated pace; and, among the causes of this advancement, a foremost place must be assigned to the increased number and activity of its cultivators. This is to be ascribed, I believe, in some considerable measure, to the establishment of schools of Practical Physiology in various parts of Europe. Opportunities for the practical pursuit of Anatomy have long been deemed an indispensable requisite for that study. Chemical laboratories, where young men are trained to chemical research, have powerfully contributed to promote the science of Chemistry. To these are now added, in various schools on the Continent, and especially in Germany and Holland, physiological laboratories, in which opportunities are offered for the practical study of structural anatomy, physiological chemistry, and experimental physiology. In these establishments, encouragement is given and facilities afforded for original research; and all the requisite arrangements, with the best instrumental appliances, are provided for that purpose. Accordingly, many valuable physiological memoirs have emanated from the practical schools of Berlin, Dorpat, Würzburg, Utrecht, and elsewhere; and accomplished young professors and assistants have been supplied to the various German Universities, there to carry on their independent researches.

The practical schools of chemistry in this country have taken an honorable place in the advancement of their science. Physiology, it is true, holds out no material rewards to her votaries; let us hope, nevertheless, that there will not be wanting young and ardent aspirants, in adequate numbers, who, through their devotion to science and desire of honorable distinction, may place modern British physiology in the same worthy position.

Much may reasonably be expected from the position which physiology has now taken as a branch of general education. For more than twenty years animal physiology has, to a certain extent, entered into the examinations for degrees in Arts at the University of London, and is now carried to a much higher pitch in the Science degree, recently instituted by that body, and already showing promise of great good. The older Universities have followed in the same line; and in Oxford, a Chair of Physiology has been liberally endowed, and all requisite advantages afforded for study, both general and practical; and we may confidently anticipate that, under the guidance of the accomplished and energetic Professor, who has already begun his labors, the ingenuous youths who resort to that great seat of learning, untrammeled by the calls of Professional study, will powerfully aid in the advancement of the science.

The elementary truths of physiology are now also becoming a subject of instruction in ordinary schools; and in the general spread of the knowledge of the living economy, good seed may here and there fall on fertile ground, and yield a return in kind. The more general diffusion of this species of knowledge, moreover, although not intended to instruct mankind in the cure of disease, may teach them to shun its avoidable causes; above all, such knowledge is well calculated—as we know it is sorely needed—to save men, even of high intellectual and social position, from becoming the victims of illusion, or the dupes of imposture.

Experiments on Living Animals.—As I have spoken in commendation of experiment, I cannot avoid digressing for a moment to say a few words on the indignant but misdirected declamation in which many well-meaning persons permit themselves to indulge against experiments on animals, which they indiscriminately denounce under the opprobrious name of "vivisections." This is a matter which not only touches the character for humanity of physiologists, but concerns our common Profession. It is a subject on which I have reflected much in the course of my life, soberly, I trust, and impartially, apart from Professional predilection, and with due regard to extra-Professional sentiment; and I trust this will not be deemed an unfitting occasion for expressing an opinion.

Experiments on brute animals have been stigmatized as cruel, barbarous, and inhuman in themselves, and calculated to blunt the feelings and roughen the nature of those who engage in or witness them. Cruelty, I may remark, is defined by our greatest authority on the meaning of words to be "delight in the pain or misery of others;" also, "an act of intentional affliction." But let us not take shelter under a definition. Let us affirm unreservedly that the sacrifice of animal life, or the infliction of pain, unless with a view to some commensurately useful result, is utterly indefensible.

Tried by this test, I believe the great majority of experimenters will be pronounced free from just censure. Attention has, it is true, been lately directed to proceedings carried on in some foreign veterinary schools, where the pupils, in order to learn operative dexterity, are allowed and encouraged to practice severe operations on living animals. Seeing that every useful end may be attained by operating on the dead body, the practice in question has excited the just indignation, not only of the world at large, but of the Medical Profession, and has been fittingly reprobated by the organs of Medical opinion. Experimental physiology has, happily, not to answer for these revolting proceedings, though it may suffer through the indiscriminate odium they are calculated to stir up.

As to physiological experiments, strictly so called, I may remind you that a large proportion of them are attended with the immediate death of the animal, and, therefore, involve only momentary pain; or are performed when the subjects have been rendered insensible by anæsthetic agents. These, then, are cases involving at the most only the sacrifice of animal life; and, when we consider the countless myriads of the brute creation that are daily slaughtered for man's sustenance, or are left to perish from hunger or the severity of the season, or fall a prey to their natural enemies, to say nothing of the multitudes killed for sport, surely it is not too much to claim that an infinitesimal share of this vast sacrifice may be applied towards the extension of human knowledge and the alleviation of human suffering. Experiments, no doubt, still remain, in which the infliction of pain, more or less protracted, cannot be avoided. In such cases, the adequacy of the end in view, and the reasonable probability of its attainment, must constitute the justification. And let it be considered that by such means most of the fundamental truths of physiology have been established, including the doctrine of the circulation itself; the practicability of important Surgical procedures has been tested; the action of poisons on the animal body demonstrated; remedies have been discovered; and innumerable results obtained, needless to specify before this audience, which have tended to the recognition of scientific truth or the promotion of the material good of mankind.

But I doubt not you will agree with me in thinking that, when a result has been thoroughly established by repeated trials and on competent authority, it is, at least as a general rule, scarcely warrantable to repeat a series of severe experiments solely to prove the matter again for our individual satisfaction; and, doubtless, you will also agree that discretion is especially required in the exhibition of painful experiments for the sake merely of instruction. In this country, indeed, the exhibition of experiments in lectures is not carried to any considerable extent. Moreover, they may, for the most part, be performed on animals deprived of sensibility. As to other cases, there are occasions when I venture to think their exhibition is justifiable and proper; as, for instance, when they serve to impress vividly on the mind some great fundamental truth in the science, or when the purpose is to impart to the learner a species of knowledge which is important for the safe practice of his Profession, but which he cannot readily acquire in any other way; as, for example, the symptoms and effects produced by various poisons, ignorance of which might lead to fatal errors in practice, or to the miscarriage of justice, and that, too, when innocent life may be at stake.

Lastly, your own experience, and your intercourse with men who have largely engaged in such experimental investigations, must convince you that there is no real foundation for their alleged evil influence on those who practice them. I need not multiply examples in support of this averment. Haller, who set a high value on experiments on animals, and often had recourse to them, was not only an illustrious physiologist, but a man of refined taste, highly accomplished in polite literature, and assuredly of no ungentle nature; and, if our social censors demand a living proof that the discreet and judicious employment of experiments on animals is not incompatible with kindness of heart and elevation of sentiment, with a scholarly taste for letters, and with serene and fruitful meditation in philosophy, I need but mention the venerated name of Sir Benjamin Brodie, who, before he became engrossed with the duties of his great professional career, had earned the highest distinction as an experimental physiologist.

In proceeding now to speak of improved methods and appliances in physiological investigation, I will first refer to the extension of our

Means for the actual Inspection of Phenomena.—If, under this head, I mention the microscope, I shall doubtless be told that it is of ancient use in physiology; but its powers have been enhanced and its use extended. I might also tell that, five-and-twenty years ago, I was one among the very few Medical teachers in this country who exhibited objects to students with the microscope. Indeed, at that time we had to meet and answer objections to its employment; whereas now it has become almost a household instrument. I remember, too, the time when we had to work laboriously with the simple lens, by reason of the defects of the compound microscope; but, thanks to the improvements in achromatic objectives, for which we are especially indebted to the suggestive skill of Mr. Joseph Jackson Lister, the compound instrument is now available for every purpose, and, in the hands of British and foreign makers, goes on improving both in its principal parts and accessories. And here I must not omit to acknowledge the influence of the Microscopical Society, which, by bringing together men of various pursuits for the common purpose of promoting microscopical research and encouraging improvements in the instrument, as well as by spreading the knowledge of microscopical science by their publications, has contributed in no slight degree to further the advance of physiology.

In the ophthalmoscope we have now a means of inspecting the interior of the eyeball; and although it has as yet been employed almost exclusively for the investigation of disease, nevertheless, as it brings under our scrutiny the internal surface of the eye and the condition of the transparent humors, so as to expose the cause of various entoptic phenomena and other affections of vision, it cannot fail to extend our knowledge of the physiology of the organ.

The condition of the glottis during the production of the voice, and in various states of respiration, as well as the changes of the vocal cords in the intonation of the different notes, has long been a subject of interesting inquiry to physicists and physiologists. But heretofore our knowledge has been mainly inferential, from the known structure of the vocal organ, from the results of experiments with the dead larynx, and the observation of the few changes perceptible externally, considered in relation to the laws of acoustics. Accordingly, very different views have been held, and various interpretations given of the matters in question. Now, however, a simple apparatus has been devised for bringing the glottis and its movements under the cognizance of our eyesight. In 1855, Mr. Manuel Garcia described, and caused to be exhibited to the Royal Society, a small reflecting speculum, by which he was enabled to inspect the glottis; and, at the same time, gave the results he had obtained with it in reference to the mechanism of the voice. Garcia, however, was unable to bring the whole extent of the glottis into view; but more lately, the method may almost be said to have been brought to perfection in the laryngoscope of Professor Czermak. By means of this instrument, the whole glottis and the adjacent parts are clearly seen; its condition during vocalization and the changes of the cords in the production of the different chest and falsetto notes become patent to the eye; and the ingenious contriver has actually succeeded in producing photographs, nay, even stereoscopic views of the phenomena. It is needless to enlarge on the physiological value of this visual test applied to the various speculations on the voice. I notice it here as a conspicuous example of an unseen process in the human body, which has remained hidden through all by-gone time, being in our own day brought fairly into light.

Although not strictly coming under this head, yet, as a means of exploring deep-seated phenomena, I may notice the thermo-electric multiplier, by which Becquerel, transfixing a muscle with a needle composed of two metals and connected with the multiplier, ascertained that the temperature rises during contraction. This apparatus, as well as the highly sensitive galvanic multiplier of Du Bois Reymond, may also be cited as a means of amplifying the indications of minute changes.

Application of Numerical Statement to Physiology.—But one of the most important steps that have been made in modern physiology is, in my judgment, the general recognition of the importance of exact numerical determination, whether as to time, space, or quantity, and its general application to those phenomena of the animal body which are susceptible of it.

A pre-eminent authority, Sir John Herschel, speaking of the advantage of numerical precision, declares that it is the very soul of science; and that its attainment affords the only criterion, or at least the best, of the truth of the theories and the correctness of experiments. I may remind you that the introduction of quantitative determinations, in the time of Lavoisier, brought about a complete revolution in chemistry. It led directly to the recognition of definite combining proportions—the basis of the atomic theory—and brought in the system of chemical notation, which has entirely changed the face of the science. Moreover, the advantage gained consisted not only in the direct discovery of truth, but in the dissipation of error. The spurious, but fascinating, theory of phlogiston, which had so long held absolute sway in chemical doctrine, could not withstand the inexorable logic of the balance.

There was an earlier time, indeed, when numbers and geometrical representations were largely dealt with in physiology; but they rested on no experimental data, and could only lead to error and confusion. I allude to the time when men's minds were so vividly impressed with the successful application of mathematics to the phenomena of the material universe by Newton, that they were tempted, from a loose analogy, to apply geometry and the calculus where they had no legitimate place. So far, indeed, did the prevailing enthusiasm extend, that even theology did not escape its influence; and a divine of the Church, who had earned some distinction in the history of infinitesimals, actually published a theological system under the strange title of "*Religionis Christianæ Principia Mathematica.*"

But while the mathematical Physicians reckoned without solid empirical data, physiological inquirers of the present day seek first to obtain such data, from which they may reckon.

Numerical statement has, of course, long been usual in the chemistry of the animal body; but I wish here to refer to the application of exact measurement to the physical phenomena concerned in physiological processes; and, as a principal example, I will select the circulation of the blood.

The first, though but solitary, steps in this path of inquiry were undoubtedly made, long back in the last century, by Dr. Stephen Hales, who, though a reverend clergyman of the Church, and continually occupied with useful projects for the public good, did not scruple to engage in experiments on living animals. Dr. Hales measured the pressure of the blood in the vessels, and recognized its fluctuations, caused by the impulse of the heart and the movements of the chest. His procedure consisted in introducing a tall glass tube into a blood-vessel, and measuring the height to which the blood rose in the tube in consequence of the pressure to which it was subjected within the vessel. About thirty years ago, M. Poiseuille, a distinguished French physicist, who, after a long interval, took up the inquiry, substituted a short bent tube containing mercury for the long unmanageable column of blood; imitating, in this respect, the greater example of Torricelli, when he substituted mercury for water to measure the pressure of the atmosphere. Poiseuille's instrument, which he named the hæmadynamometer, has been of late further improved, and a contrivance has been added by which the oscillations of the mercury are inscribed in form of an undulating curve on a cylinder made to revolve by clockwork; the height of the undulations of the curve denoting the *pressure*, and their horizontal amplitude the *time*. The revolving cylinder, I may observe, is employed for recording other measurements, as, for instance, the extent and velocity of the contractions of muscle.

By this method the mean pressure of the blood in the arteries is ascertained in various species of animals, and its fluctuations caused by respiration and the heart's impulse recorded, in comparable diagrams; also the rate of decrease in the smaller vessels, and the relation of the pressure in the veins to that in the arteries. It is thus shown that the heart is adequate to propel the blood through its entire circuit, without the aid of capillary forces, vital attractions and repulsions, and various fancied agencies which have got credit for auxiliary service now shown to be not required.

The velocity of the blood, too, has been determined. Hales measured its weight in the capillaries of the frog, and the exactness of his measurement has been confirmed in our own day. The rate has been since obtained for the capillaries of warm-blooded animals. More lately, the vastly greater velocity in the large arteries has been ascertained and approximately measured by means of instruments contrived by Volckman and Vierordt. Lastly, the time of an entire circulation, or, at least, the time taken by a given portion of blood to perform its entire circuit, has been determined by a well-devised experiment of Hering, and found to be certainly not more than half a minute. This result, startling at first by reason of the unexpected shortness of the time, has been amply confirmed by subsequent experimenters.

The extreme swiftness of the blood thus demonstrated is, after all, in harmony with the known rapidity of secretion, absorption, and other phenomena depending on the circulation. Indeed, in reasoning on the animal economy, whether in health or disease, we cannot too constantly bear in mind the extreme rapidity of many of these vital processes. Had this consideration been kept in view, there would have been no need for imagining the existence of hidden passages, *viæ* *clandestinæ*, to account for the sudden conveyance of substances from the stomach to the kidney; or for resorting to erroneous interpretations of the marvelously sudden action of certain poisons. The same consideration enables us to conceive the redintegration of energy in rhythmically acting muscles, by nutrition in the intervals of rest, which, as pointed out by Mr. Paget, is, doubtless, a main condition of the rhythmic motion of the heart, diaphragm, and other muscles acting in like manner. I may add that the entire quantity of the blood in the body, which used to be reckoned at about twenty-eight pounds in an average man, is now ascertained to be not much above half that amount.

Exact determinations of corresponding kind have been introduced into the physiology of nerves and muscles. The extent, velocity and force of muscular contraction, under different determinate degrees of stimulus, under the influence of poisonous agents, and of various other conditions, have now been submitted to accurate measurement and record. But perhaps the greatest triumph of precise instrumental determination applied to the phenomena of life, is the measurement of the velocity with which the excitement by a stimulus is transmitted along a nerve. This has actually been accomplished through the sagacity and ingenuity of Professor Helmholtz; and the result is, that, compared with analogous phenomena in the external world, nervous excitement travels very slowly. So far from being comparable in this respect to light or electricity, it is much inferior even to sound. In the muscular nerves of frogs, Helmholtz found the average rate to be between eighty and ninety feet in a second; and, what is of great interest, he found that it was retarded by cold. The rate of speed in warm-blooded animals is but very imperfectly determined, but it would appear to be probably more than twice as great as in the frog.

To these examples others might be added, did time and my estimate of your patience permit; such as the comparison, by means of measurement, of the sensibility of different parts of the cutaneous surface, and its variations from exercise of its function, disease, and other circumstances; also the determination of the extent and force of respiration, and other physiological quantities or constants; but enough has been adduced to illustrate the spirit of exactness which now animates physiology.

Progress of Physiological Chemistry.—Proceeding now to touch on the acquisitions of material knowledge and the changes in scientific doctrine which mark the progress of physiology, and beginning with physiological chemistry, I need scarcely remark that the spirit of research in that department has been so busy, and the results obtained so vast and so varied, that, compared with its importance, my reference to the subject must be but slight and partial.

I may remind you, in the first place, of the knowledge gained concerning the proximate principles of the food; the recognition, in plants, of albuminoid compounds, in virtue of which vegetable nourishment sustains animal life; the light thrown on the changes which nutrient matters undergo in the alimentary canal, fitting them for absorption and reception into the blood; and on the operation of the salivary, gastric, and pancreatic fluids in producing these changes, as well as the discovery of the peculiar constituents of those fluids on which their efficacy depends.

Doubtless, also, all are well aware of the broad and luminous views emanating from Liebig and his school, as to the use, immediate destination, and ultimate disposal of the several constituents of the aliment in repairing the consumption of the tissues, and maintaining the heat of the body; and the final identification, qualitative and quantitative, by Schmidt, Boussingault, Barral, Bischoff, and others, of the constituent elements of the nutritive principles, as discharged by the lungs, kidneys, and skin.

It is now also shown how these exuvial materials, after being delivered over to the earth and the atmosphere, in the shape of water, carbonic acid, and ammoniacal urinary products, become available as the food of plants, by which they are again combined into proximate principles, and serve anew for the sustenance of the animal kingdom. And in this admirable cycle of interchange and reciprocal compensation between the three kingdoms of nature, we are permitted to see another example of that tendency to the maintenance of order and stability so conspicuous in the phenomena of the universe.

But although the chemist thus presents us, as it were, with an accurate balance-sheet, showing the food taken into the system and the final products given out, and has shown that the supply can be identified and accounted for in the expenditure, we are still but imperfectly informed of the intermediate changes which the nutrient matters undergo, in the blood and in the tissues, before they are brought to their excreted condition. Among the actual data which afford a basis for this inquiry, and may eventually help to the solution of the question, I would refer to the several compounds which have been obtained from muscle, and which are probably immediate products of the metamorphosis of that tissue; but especially to the brilliant discovery by Bernard of the production in the animal economy of a substance analogous to starch. This amyloid substance, glycogen, shown by Bernard to be largely generated in the liver, and, according to subsequent experimenters, also in the muscles and other tissues, is supposed to be converted into sugar and finally oxydized; although Dr. Pavy, led by his very ingenious and laborious researches, has thrown doubts on its actual conversion into sugar during life. However this may be, it is plain that in the production of glycogen we see the actual formation of a hydrocarbonous product in the animal body; and as its production goes on when hydrocarbonous food, and indeed every kind of food is withheld, it probably represents one of the transitional conditions through which hydrocarbonous matter, whether proceeding directly from the food or derived from the metamorphosis of albuminoid tissues, passes, before final oxydation.

As bearing on these larger questions, I would also refer to the advances made in the chemical examination of the tissues and fluids, and especially of the blood; to the recent views respecting the condition of the inspired oxygen of the blood, and the experiments of Harley and Meyer, showing, in opposition to Magnus, that the oxygen is not merely retained in the fluid by physical absorption, but held by chemical affinity; also to the recognition of ammonia in the blood, and the well-known discovery by our distinguished associate, Dr. Richardson, of its efficacy in maintaining fluidity.

It is worthy of note that in the course of such inquiries particular facts are sometimes elicited, which afford hints of fresh discovery and suggest important practical applications. The unlooked-for contrast between the saline constituents of the blood-plasma and corpuscles—the one containing chiefly soda, the other potash—and the predominance of potash in muscle, taken in connection with the well-known impairment of muscular strength and impoverishment of the blood in scurvy, led Dr. Garrod to suspect that the disease might be connected with deficiency of potash in the system. And on further reflecting that the most approved antiscorbutic remedies and aliments contain much potash, he was led to try that substance as an antidote, and, so far as his experience goes, he has found it a promising one.

Instances like this should teach us not to disregard apparently slight differences, provided they are constant. I remember the time when potash and soda passed practically as equivalent; we have now reason to think that they perform very different service in the living economy. As another illustration of the point now urged, I may mention the difference observed by Dr. Edward Smith in the effects of rum and brandy, even in small quantities, on the respiration; the one always increasing the exhaled carbonic acid, the other as invariably diminishing it. And here again we are reminded that differences in various liquors or in the same liquor according to its age, although in no way cognizable by chemical analysis, cause very different effects upon the human system.

Let no one imagine that I mean to put in a word for Homœopathy. I have no faith in the dogma of *similia similibus;* nor in decillionth dilutions and dynamizing processes. I wish only to urge that it is both unphilosophical and unpractical to disregard minute quantities and faintly marked differences, provided always their observed effects are constant. We are familiar with the influence of odors upon the nervous system—intense in their effects, but in substance eluding the subtlest chemistry. And I may borrow an illustration of the same point from physical science. The volatile matter in a Torricellian vacuum must be, to the last degree, attenuated, and yet it counts for much in certain pheuomena. It conveys the luminous electric discharge in all its brilliancy and beauty; while, as discovered by M. Gassiot, a more perfect void, like a gulf, stops the transmission altogether. Again, it is known that obscure radiant heat is partially absorbed in passing through gases and vapors, but in very different degrees; and Professor Tyndall shows that the absorption of terrestrial rays by the vaporous odor of a flower-bed may exceed in amount that of the entire oxygen and nitrogen in the column of the atmosphere incumbent on the same area.

But it remains for me yet to notice one of the most important conclusions which the recent chemistry of nutrition tends to establish.

In an artificial machine the moving force must be supplied from without. The apparatus cannot generate force by its own intrinsic mechanism; otherwise there would be realized the principle of a perpetual motion. The spring which moves a watch must first be wound up; and it merely gives out by slow distribution the force that has been imparted to it quickly. Again, the heat which moves a steam-engine is obtained by the combustion of coal; and the sum of the heat evolved and mechanical force generated exactly corresponds with the amount of fuel consumed. Now, the belief at one time prevailed that the natural machine of the animal body was exempt from these conditions, and was endowed with the faculty of generating force intrinsically, and independently of outward agencies. A connection between the taking-in of food and the development of force was not recognized; the nourishment seemed to be destined only to grease, as it were, the wheel-work of the machine; to replace what was used up, and renew what had grown old. The teaching of modern physiology is different. In the albuminous and hydrocarbonous food, in the inspiration of oxygen, in the wear and repair of the tissues, and in the discharge of altered and residuary matters—we see materials and processes for the evolution of heat, and for the production of the energy manifested in muscular and nervous action.

The conditions are too complex, and the data of a precise and trustworthy character are, as yet, too scanty, to permit the demonstration of an exact equivalence between the heat and work produced in living bodies, and the chemical forces which are set in action. But there is still an obvious parallelism—a certain correspondence in the variations of these two quantities—which presses on us the conviction of their mutual dependence.

But while the heat evolved in the living body can, to within a small fraction, be accounted for by known chemical actions, and the development of muscular force is measurable and is shown to be accompanied by chemical changes—chiefly oxydation of the muscular substance—with which it may be compared in amount, it must be observed, in regard to the nervous energy, that, although we have indications to show that its manifestation involves consumption of nervous matter, and the one is probably proportionate to the other, yet, as we have no means of measuring the intensity of sensation and volition, not to speak of other energies of the nervous system, we cannot profess to establish their quantitative relation.

Physiology of the Nervous System.—Nowhere has the spirit of modern research been more active or more fruitful than in the physiology of the nervous system; but as this was made the subject of an elaborate address, delivered before the Association three years ago, I shall confine myself to one or two later accessions in this department.

I must, however, first notice the important method of research introduced some years since by Dr. Augustus Waller, for tracing the distribution and determining the functions of nerves. This method consists in taking advantage of the disorganization of the peripheral part of a nerve which follows on its section, in order to identify its fibres, by their altered state, when associated or entangled with nerve-fibres derived from other sources; also by stimulating a nervous trunk after the fibres of one or more of its tributaries have been thus rendered ineffective, to ascertain what share of the common function belongs to each.

On all sides inquiry has been carried on into the electricity of nerves and muscles; but, out of so vast and valuable material, I would merely point out as especially worthy of attention, the investigations of Pflüger into the laws of the electric excitement of nerves, as well as the discussions to which they have given rise.

Although every part of nervous physiology possesses intense interest, I confess at this moment I feel most deeply impressed by the knowledge recently gained respecting the influence of the nervous system on the organic or nutritive functions. Many long years did physiologists search for positive experimental evidence of the influence of nerves on blood-vessels. It has now flowed in abundantly; and I cannot help ascribing some considerable share of the success of recent inquiries to the employment of the electric induction coil and intermitting current, as a much more effectual mode of electrically stimulating nerves than the means previously in use.

The influence of the nervous system on secretion has been long acknowledged. The sudden flow or arrest of various secretions through mental states, afforded ample evidence of the general fact. Lately, however, it has been shown by Ludwig, Bernard, and others, that the secretion of glands, and more especially of the salivary and lachrymal glands, may be increased by artificial stimulation of their nerves, both direct and reflex. Bernard has also observed the remarkable fact, that whilst the gland is in activity and secretion going on, the flow of blood through its vessels is greatly increased, and the passing blood, thus increased in quantity, does not acquire its usual dark color in the veins. The interesting result, too, has come out, that while stimulation of certain cerebro-spinal nerves proceeding to the salivary glands augments the secretion, similar excitement of the sympathetic branches checks its flow, and also greatly reduces the current of the blood.

It is thus plain that the nerves operate on the blood-vessels; the cerebro-spinal causing dilatation—acting probably as the vagus under similar excitement affects the heart—whilst the sympathetic has the opposite effect. Nevertheless, there are other phenomena brought out in these experiments going a far way to show that in promoting secretion the stimulated nerve does not act merely in an indirect manner, through the change caused in the vessels; and there are not insignificant grounds for supposing that the nervous excitement may operate directly on the elements of the gland, and bring about physical and chemical changes in the contents of the gland-cells.

There is also independent evidence of a more conclusive character to prove that cells, or rather their contents, may be directly influenced through the nerves. The pigment-cells of the skin of the frog change their appearance under the influence of nerves; and this phenomenon has been shown by Professor Lister to consist, not in a contraction and dilatation of the cell-wall, as was supposed by the German physiologists, but in a movement of the minute pigmentary molecules with which these ramified cells are filled; and this movement may be brought about by stimulating the nerves both directly and in a reflex manner. That chemical changes in cells may be influenced through the nerves, is shown in a striking manner by Kölliker's experiments on the luminiferous organ of the firefly. Facts such as these appear to me especially worthy of regard, as the phenomena they present, being comparatively simple and open to observation, are well calculated to afford an insight into the agency of the nervous system in more recondite nutritive processes.

I am led by these considerations to remark on the great advantage that has accrued, and is likely further to accrue, from an extended acquaintance with the structure and economy of creatures of essentially simple organization. It is in these humblest representatives of the living organism that we may hope to find physiological problems presented in their greatest simplicity, and most thoroughly disentangled from unessential complications. Many ingenious but futile theories of muscular motion would never have seen the light, had the vitally contractile substance and its affections been studied in the protozoa.

Physiology of Reproduction.—In the physiology of reproduction, the old question of spontaneous generation has been lately revived and submitted to fresh discussion; but, as I think, has been satisfactorily answered in the negative, and especially through the admirable investigations of M. Pasteur. That most able and accomplished inquirer has not only proved the non-appearance of infusorial organisms when adequate means are taken to exclude their germs, but has succeeded in actually demonstrating the presence of such germinal spores in the atmosphere. Air was made to pass through a tube filled with gun-cotton taken from a sample proved to be free from foreign admixture. The cotton was then dissolved in ether or chloroform; and sporules of algæ and other simple organisms, which had been entangled and arrested in their passage, were found in the liquid. It cannot but occur to us that this simple and to all appearance efficacious method might be advantageously employed to explore miasmatic and infected atmospheres. M. Pasteur was led on by these inquiries to a careful study of the phenomena of fermentation; and he has not only added largely to our knowledge of the chemical changes and products presenting themselves in that remarkable process, but has thrown much light on the operation of the living organisms on whose presence and influence it appears to depend.

But while origin from parents and reproduction of their like still remain as great characters of living beings, it has been discovered that, in some of the lower grades of the animal kingdom, the offspring, before reaching the condition of the parent, passes through a series of strange vicissitudes, not merely representing the changes of form, structure, and habits observed in the well-known transitions of an ordinary larva, but involving the production of a new brood or of new broods by the still unfinished being, differing from it in form and structure, but finally assuming the characters of the original parent. Various insulated cases of this phenomenon, delusive as they sometimes were to systematizing naturalists, had previously been noticed in different quarters; but the first connected view of the subject was given by the Danish naturalist, Steenstrup, in a work which has been translated and published by the Ray Society.

The process now referred to has been named "alternate generation," or metagenesis. It possesses a special claim on the interest of the Medical Profession, inasmuch as some most interesting examples of it occur among the entozoa. It is now known, for instance, that the cysticercus is but a certain state or stage of the tapeworm; and here I must refer to the interesting researches of Mr. George Rainey on this subject, published in the *Philosophical Transactions*. I have time, however, only to explain that, while the stages of transition from the cysticercus to the tænia had been satisfactorily traced, Mr. Rainey discovered that the tænia-embryo, in its conversion into the cysticercus, passed through a curious phase which had not been till then observed.

I pass over the renewed investigations on the generation of the aphides, which has been a curious subject of speculation since the days of Bonnet and Reaumur, in order that I may dwell a moment on the startling discovery that animals with sexual organization, and holding no mean place in the scale of being, may produce young from eggs that have never been fertilized by the male. I doubt not you have heard of the remarkable observations of Dzierzon and Von Siebold, which prove that the eggs of the queen-bee produce drones without being impregnated, and that the impregnated eggs invariably produce neuters. No explanation has been attempted of this singular result, except in reference to its final purpose in the economy of the hive;

and it becomes all the more perplexing when compared with the case of certain moths, in which parthenogenesis has also been discovered; for, in some of these, unimpregnated eggs give rise exclusively to female offspring, whilst in the silkworm both male and female young may issue from eggs without impregnation.

With regard to the actual process of impregnation, it is now satisfactorily proved that the male element passes into the interior of the ovum. Spermatozoa—improperly so called—have now been traced within the ovum in many different animals, mammalia not excepted; and there can be no doubt that this is the general condition of sexual fecundation.

The study of embryonic development, which had engaged the interest of the great Greek naturalist, and was prosecuted with more or less success after the revival of science down to the epoch of Caspar Frederick Wolff in the last century, received a fresh impulse from the admirable researches of Pander on the evolution of the chick, now more than forty years ago. Pander, in fact, discovered a fundamental principle which regulates the early stages of the process, and which became, as it were, a compass to guide succeeding explorers in this interesting but difficult field. Investigation has now been pushed so far, that I believe I am right in saying that the development of the embryo has been studied, more or less fully, in examples representing all the great, and many of the subordinate, divisions of the animal kingdom.

You are aware that the study of embryogeny, besides serving to elucidate the genetic economy in the particular animal type to which each example belongs, has a twofold general application—namely, first, to the establishment of the general laws of formation of the animal body, and the relations as to homology of its several parts; and, secondly, to the investigation of the development and essential relations of its constituent textures; in short, to morphology and to histology.

The doctrine of homology, which took its rise through the genius of Goethe, and which has since been so ably and successfully prosecuted, by comparison of the mature animal structure, by Geoffroy and Meckel, and especially by Owen, was placed on the securer, but yet not exclusive basis of embryology, through the sagacity and industry of Rathke and Von Baer. The surpassing beauty and interest of the teachings of homology are seen especially in its relations to comparative anatomy and zoology, and, therefore, I should not make further reference to it here, even did I feel myself more competent to the task.

Recent Advances in Histology.—For the first quarter of the present century, and more, the study of the animal tissues and of the intimate structure of the viscera scarcely moved beyond the point at which it was left by Bichat. Its signal advance since that time has, I need scarcely say, been mainly owing to the extended use of the microscope and the improvements in that instrument, as well as the skillful employment of suitable reagents for bringing out the microscopic characters of the objects, and in the improvement of these last-mentioned resources, there is no name more deserving of honorable mention than that of our able and zealous associate, Professor Beale. But in following the history of modern inquiry, it is pleasing from time to time to meet with examples evincing correct and careful work by Leeuwenhoek, Malpighi, our ingenious countryman Hooke, and other early laborers in this field; instances, indeed, of true but neglected observations of that early time verified in our own day; like living seeds long dormant in the ground, which are turned up by the furrow of a later cultivation.

But, to return to the development and nutrition of the tissues:

The grand feature of progress in this direction is the application to the animal tissues of the principle of cell-agency and cell-metamorphosis, which had already been recognized in the vegetable kingdom.

The cell-theory of animal growth and development, on its promulgation by Schwann, in 1839, was received and adopted with eagerness, amounting almost to enthusiasm. Men fancied that in the "power of the cell" they had found a key to unlock the secrets of life. Each cell had, as it were, its ministering genius, working out an assigned task in the living economy. There was, in truth, a return to the Helmontian doctrine of the archeus; but instead of a single autocratic ruler over the whole system, it was the conception of a confederation of archeoli, each dominating in its own cell, and all acting in concert towards a purpose, like bees in a hive. But although the fact of the several existence and joint operation of cells was true, it was seen on a more sober view, that to ascribe this to an all-efficient cell-power amounted to no real explanation.

After making all reasonable abatement, however, the cell theory, modified as it has been, and still undergoing modification, remains one of the most fertile ideas in modern physiology.

Among the simplest modes of animal and vegetable existence, we have examples of a body with the characters of a cell constituting a complete organism; assuming nourishment, undergoing growth, and reproducing its like—exercising, in short, the functions of an independent living being. The offspring of the higher animals first appears as a cell, and the embryo for a time consists of an aggregation of cells. Throughout after-life, also, certain textures retain their cellular structure. Cells are employed in separating matters from the blood to be discharged in secretion, and may become the seat of chemical and plastic processes, or even of higher operations, as in the nervous system.

It was, however, soon perceived that various kinds of tissue were produced without the immediate intervention of cells, by molecular changes taking place in an amorphous intercellular substance. But even in this case it is held by many that this substance is first converted from raw material into an organizable blastema by the agency of the neighboring cells.

Again, the efficacy of cells has been very variously estimated in the nutrition of the mature organs and textures. On the one hand, it is maintained that the organized fabric is kept up like the population of a city, by the continual formation of new structural elements, to take the place of the old; and this is undoubtedly true of epidermis and some allied structures; on the other hand, it is contended, with much reason, that, with the exceptions alluded to, renewal may take place, particle by particle, the new matter replacing the old by what may be called molecular substitution. But even among those who adopt this last hypothesis it is with some a favorite opinion, that the bodies like cell nuclei, which are persistent in most of the mature tissues, if they do not generate new form elements, at least select the appropriate materials from the interstitial fluid, and fit them for taking part in the organic structure.

But it has been urged, and justly, that the so-called "cells" are not always and necessarily vesicular in structure; that the envelope, or cell-wall, is not an essential part, and that the nucleus, and more or less of the matter surrounding it, really constitute the organically active element. In this view, therefore, the envelope, when present, is merely an insulating and containing part, which might be compared to the flask which holds the active ingredients in a chemical process. Still it is a permeable shell, which permits of the entrance and issue of matter; and it stands in intimate relation to the intercellular substances. There may or may not be a distinct vesicular envelope, but in either case the nucleus and cell contents remain insulated in and contrasted in properties with the intercellular substance. To express this relation, Mr. Huxley accordingly proposes to call the former the "edoplast," and to distinguish the surrounding substance with the envelope, if present, as the "periplast."

Lastly, a wide difference of opinion prevails as to the origin of cells. Some physiologists and phytologists hold that cells are invariably and exclusively derived from other cells; that all the cells of an organism are descended by successive generations from the cell of the ovum originally proceeding from the parent. It is as strenuously maintained by others that nuclei and cells may arise independently in an organizable blastema; nay, that they may be produced in fluid organic matter by a merely physical process.

Neither confident assertion of opinion nor ample allegation of fact is wanting on either side of this and the other questions referred to. Observations, conflicting with each other, spring up indeed on all sides, in rank growth, but the time is not come for separating the tares from the wheat.

The Forces of the Living Organism.—And now, gentlemen, in drawing to a close, I may be expected to say a word on the prevailing views as to the powers which animate the living organism.

I have already remarked that many of the processes of the living economy issue in physical or chemical results, and I have stated that the more or less close relation subsisting between these results, so far as they can be estimated, and the consumption and oxydation of nutriment, as indicated in respiration and excretion, would seem to show that the chemical and mechanical forces developed are derived from an extrinsic source; but, at the same time, that there are energies displayed in the living body not yet estimated in amount, concerning which, therefore, there is not the same clear evidence. I refer especially to the nervous energy.

In speaking, however, of the nerve-force, I understand that force which is common to all creatures possessing a nervous system, from the highest to the lowest. I do not refer to the highest attributes of man, to his sense of moral responsibility, his consciousness of dependence on a higher power, and his aspirations after perfection in a future state.

This nervous force has long been likened to electricity; but rather through a vague perception of analogy than from any rigorous comparison. It is true that electric force is developed in the nerves, and even exhibits modifications connected with different conditions of nervous action. Still, it must be borne in mind that the evolution of electricity is a common accompaniment of various processes involving chemical change, whether within the body or in external nature; and the tendency of recent speculation is not towards identification of the nerve-force with electricity, but rather to suggest that the two stand related in the same way as electricity and other physical forces are related to each other; that is, as manifestations of a common force or energy, of which they, severally, are the special modifications.

Since the memorable experiments of Count Rumford on the heat of friction, which led that philosopher to the conclusion that heat is a form of motion, and the determination by Dr. Joule at a later period, of the equivalent of heat expressed in mechanical work, the doctrine of commutability and equivalence of force, first applied to these two agencies, has extended itself to the other forces operating in the material universe. Accordingly, the opinion is now gaining consistency and acceptance, that mechanical energy, heat, light, chemical action, electricity and magnetism, are mutually convertible, and are respectively equivalent to each other; moreover, that they are probably all the expression of a common force which manifests itself under these several modifications, according to the different material or dynamic conditions in which it operates.

Now, the belief has some time prevailed that the nervous, with perhaps other forms of organic energy, has its place in the same circle of reciprocally productive and equivalent forces; and not being electricity more than it is heat or chemical affinity, yet stands related to electricity and the other forces in the same way that they are related to each other.

But supposing this probable doctrine to be proved and to betoken a signal advance in physiology, are we come to the end of our inquiries? are we thereby enabled to explain even the most characteristic phenomena of the living organism?

By mechanical force duly applied, a fabric may be woven, as well, or perhaps better, than by human hands; but by what intelligent pre-arrangement is the pattern determined and finally brought out? So in the production and development of an animal, and in its subsequent workings—given the force or forces operating—how are the determinate forms and qualities of the organism produced?

To all our most exquisite means of scrutiny, the ovum, as it proceeds from the parent, presents nothing to indicate the course of its future development; and yet we speedily can discern in it the traces of the new being, and recognize the successive appearance of each new member and organ—in due time, and form, and proportion—until the body is built up and completed after the pattern of the parent. We can perceive nothing in the ovum of man to distinguish it from that of a quadruped, although their final destination is so different. We are constrained, therefore, to admit some pre-existent condition, to us inscrutable, which determines the specific direction in which the forces, acting in development, although probably supplied from without, must operate within the organism. And the marvel reaches its height when we reflect, that not the character of the species merely, but the individual likeness of the parent—aye, of both parents—displays itself in the offspring; and not alone in bodily feature, but often also in intellectual and moral peculiarities.

Then, not alone in regulated form and proportion, do the parts appear, but all fitting harmoniously the one to the other, and each in its appointed time. The periods of incubation and gestation, different but determinate in each species; the regulated time of consolidation and completion of the bones of the skeleton; of the eruption and succession of the teeth; the periods of maturity, and decline of the whole body and of particular organs; and a host of examples supplied by the history of the lower members of the creation, serve to illustrate that conspicuous law of subordination to time in the phenomena of the organic world, which Mr. Paget has aptly designated as the "chronometry of life."

Now, while we can in many cases discern the purpose of these adaptations of form, proportion, and time, and perceive how they, as it were, fit in with, although not apparently produced by, the outward circumstances in which the organism is placed; and while we must revere the infinite wisdom by which they are harmoniously brought about, we are still utterly at a loss to explain them by reference to efficient causes. In some of the lower tribes of animals, it is true, the results are affected more or less by physical influences, but these influences operate upon internal conditions, existing independently. In the human body, even, you may cramp the growth of a Chinese foot, or flatten a Carib skull, but this is suppression or distortion, not formation.

The growth of a finger or a tooth may be traced, and various steps in the process explained; but the acquirement by these and other parts, and, indeed, by the entire body, of their characteristic form and proportion, is still an inscrutable, at least an unpenetrated mystery. Unpenetrated, I mean, as regards the physical or efficient causes of the phenomena; for, the purpose or final cause is often patent; and hence we see that teleological explanation holds, and doubtless must continue to hold, a large place in physiology.

But, finally, shall we, on that account, censure as rash or stigmatize as impious all attempts to go farther? Shall we presumptuously set limits to the scope of those inquiring faculties which God has conferred on man, or prejudge, and reject by anticipation, conclusions to which their rational and reverential exercise may lead? Assuredly not. Let us not, therefore, with narrow views of the scheme of Providence, worthy of a darker age, join in blindly denouncing the genial effort of one of the foremost men of science in our time, to refer mutations of organic form and the origin of species to natural causes of known operation. Faint as some may deem the prospect of success of Mr. Darwin's great attempt, let none condemn its tendency. Should it ever be shown that the wonderful adaptation and harmonious working, so conspicuous in the living creation, have been brought about by the operation of great natural causes, originally ordained by the Author of the Universe, and acting through countless ages of time, surely such an issue could but tend to enlighten and exalt our conceptions of creative wisdom.

Is the Produce of Diseased Animals Unwholesome as Human Food? Being a Communication read before the Metropolitan Association of the Medical Officers of Health on the 16th of April. By JOHN GAMGEE, Principal of the New Veterinary College, Edinburgh.

[Continued from page 157 of the August number]

THE VIRUS OF EPIZOOTIC PLEURO-PNEUMONIA.—The great prevalence and fatality of this disease among cows, especially in town dairies, invests this section of my subject with unusual interest, and the public good will not be consulted if we act proportionately to the poisonous nature of the meat and milk derived from cattle that have died from pleuro-pneumonia.

I cannot enter at length and quote authorities on the subject, but after a very anxious study of this disease, with a view to insure that it may not remain throughout all time on British soil, I may mention that I have arrived at the following conclusions:

1*stly.* The epizootic lung disease never originates spontaneously in the United Kingdom. It is exclusively contagious, though the losses it induces are greatest when animals are kept in defiance of sanitary rules. The ox tribe alone is subject to the disease. Sheep have suffered much from lung diseases within the last few years, but of an entirely different character, and I am not aware of a single instance in which sheep have taken the malady from contact with diseased cattle.

2*ndly.* The contagious principle is feeble in the early stage, more active in the second, and fearfully active in the third and last stages of the disease. Early removal of diseased from amongst healthy stock is an indispensable measure, with a view to prevention.

3*rdly*. The meat and milk derived from animals that die of pleuro-pneumonia, though much deteriorated in quality, cannot be called poisonous. There is a prevailing idea that in the early stages the flesh is wholesome, in the last unwholesome. This opinion is purely theoretical. The acute stage of an inflammatory disease is well known to affect seriously the functional, and even structural or chemical conditions of animal tissues. I am aware how little has been done to demonstrate the precise nature of the change, but we know sufficient to condemn the belief that when a lung is inflamed the system may be regarded as healthy. Such is the ordinary view taken of this matter. With regard to the milk, it is often in excessive quantity in the incubative stage. When cough and a slightly checked secretion are observed if an animal is slaughtered, a lung may be found already extensively hepatized. For a few days the milk continues to flow. It is altered in quality, poor, and apt to curdle. It often contains pus, and even blood.

The practical view I take of this subject is the following: Notwithstanding the certainty that the meat and milk derived from animals dying from pleuro-pneumonia are usually free from poisonous principles, they are of bad quality. They are constantly sold as good, and the milk enters the common milk-can. A wholesale system of fraud is practiced on the public by the fleshers, and others, who engage in this trade.

I think it is necessary, that if a fat bullock, or other well-conditioned animal, be taken with the disease, it should be slaughtered at once, and the flesh allowed to be sold at a reduced price. It is perfectly possible to check the spread of the disease by this method, and keeping all animals that have been in contact with the diseased one from healthy stock. To keep fat animals alive is only to incur a serious and irreparable loss.

With regard to cows, from 50 to 60 per cent. might be saved, leaving a handsome profit in favor of treatment as contrasted with slaughter at a low price. This treatment cannot, however, be undertaken in town dairies; and whereas the trade in diseased animals favors the spread of pleuro-pneumonia, it is expedient, 1stly, That the importation of stock into this country should be more carefully superintended than it is; 2ndly, That in our live markets diseased animals should not be allowed, as they are at present, to come in contact with healthy ones; and, 3rdly, Dairymen should be shown the advantages of adopting a system whereby fresh cows are not recklessly introduced into stables with healthy stock. If some check were secured to the development of the disease, fewer diseased cows would be sold to the butcher; and some means should be adopted in our large towns to institute hospitals where cattle might be sent to when diseased, without being kept in the dairies to contaminate other animals.

The subject is beset with many difficulties, but they should be overcome, whilst we hold in view that, allowing the trade in the meat and milk of cows that suffer from pleuro-pneumonia is permitting gross frauds, and the trade is the certain cause of the perpetuation of the malady on British soil. Moreover, it is impossible to estimate the ill effects of deteriorated though certainly not poisonous food of this description.

RABIES.—The poison of rabies, which is developed spontaneously within the system of certain carnivora, is well known to induce fatal rabies in herbivorous animals. Is the flesh and milk of the latter wholesome or otherwise? There are very contradictory facts and statements on this subject. No one would venture knowingly to use either, and especially because there is no certainty as to the effects which might follow. Rabies is a comparatively rare affection in the British dominions. It is very frequent in France, Germany, Italy, Spain, and the Continent of Europe generally. Lecamus, Castelli, Andry, and Delafond have furnished facts to show that the flesh of a rabid animal may occasionally be eaten with impunity. Delafond caused a dog to eat the tongue of a rabid horse, and no ill effects followed. Schenkius records that a rabid pig was slaughtered in 1553, by an innkeeper, and several persons partook of it, who died afterwards of hydrophobia. Lanzoni, a medical man at Ferrara, relates the death of three members of a family from eating the flesh of a cow that had died of this disease. Boerhaave, Van Swieten, and Gohier allude to the production of hydrophobia by eating such flesh. Krügelstein states that the milk of rabid cows is dangerous, and its consumption has been attended with fatal consequences. Spinola suggests the propriety of further experiments on this subject.

III.—ORGANIC POISONS THE RESULT OF DECOMPOSITION.—It is a well-known fact that putrefying animal matter is bad and dangerous food for man. The flesh of diseased animals putrefies rapidly, and I have seen carcasses of oxen, slaughtered whilst suffering from pleuro-pneumonia, soon decompose, even in the process of salting or pickling. The gastric juice is truly antiseptic, but we cannot trust to its preservative power no more than we can trust to cooking, or other such circumstances preventing the manifestation of ill effects from putrid meat.

There are certain poisons, the result of decomposition, which have specially attracted the attention of observers. They are, 1stly, The sausage poison; and, 2ndly, Cheese poison. I shall not detain you by a history of these well-known agents, and shall dismiss this section of my subject with remarking, that as diseased meat is very liable to putridity, it would be interesting to know if any form of sausage poison may be due or favored in development by its consumption in the manufacture of sausages. The carcasses of diseased animals that are not marketable, and diseased organs, have, to my knowledge, been cut up by the sausage-maker.*

IV.—THE EFFECTS OF MINERAL AND VEGETABLE POISONS ABSORBED INTO THE SYSTEMS OF ANIMALS.—The trade in diseased animals, by encouraging their slaughter rather than medical treatment, to a certain extent prevents the sale of drugged carcasses, and I mean by this the bodies of animals that have received large doses of medicine for the treatment of disease. Nevertheless, I have known animals slaughtered for human food that have received creosote, antimony, arsenic, and a great variety of drugs. Accidents have occurred, and must occasionally be witnessed from the use of the flesh or milk of animals that have eaten or have received medicinally poisonous agents. This may occur to the great danger of human beings, whilst the animals yielding the produce may appear perfectly healthy. Poisonous principles act very irregularly in the animal kingdom. Potassio-tartrate of antimony may be given in very large doses—many ounces daily—without affecting horse or ox. Cattle, sheep, and goats eat with impunity narcotic vegetables which poison their flesh and milk. Jalap, cantharides, calomel, aloes, and tobacco, are excellent illustrations of the contradictory results obtained in studying the nature of drugs on different animals.

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* Since the writing of this paper, Dr. Letheby's statement as to the sausages manufactured with diseased meat indicates the great danger of the practice.

It is difficult to detect by examination of meat if it contains poison. Chemical analysis alone will reveal the fact, and it would be interesting, as the seizures of diseased meat are extensive in London, to investigate to what extent drugs may be traced in the flesh. They will often be found in cattle, rarely in sheep.

The milk disease of the Americans, the partridge poison, the ill effects of goat's milk, specially reported on in the March number of the *Edinburgh Medical Journal*, appear the results of animals feeding on poisonous vegetables. Flourens has been recently investigating to what extent the milk is charged with adventitious principles introduced into the system with food. He has gone so far as to color the bones of suckling animals with madder.

The danger attending the cases of accidental poisoning, from agents swallowed by animals yielding food for man, are quite serious enough to induce us to be guarded in permitting the use of such produce. Veterinarians require a special caution on the subject as to the medicines they use in cattle, and the recommendations they give concerning the disposal of milk or carcasses when medicines have been employed.

V., *and lastly.*—PARASITIC ANIMALS AND VEGETABLES INDUCING DISEASE IN MAN AND ANIMALS.—The recent discoveries of zoology demonstrate the importance of a careful study of this subject in its practical application on the inspection of meats. The prevalence of hydatids in herbivora is very great, and there are districts in which cattle and sheep, especially the latter, suffer much from coenurus cerebralis. Cattle are very subject to attacks by the echinococcus veterinorum, and pigs are often measly, that is to say, their flesh contains the cysticercus cellulosæ. I believe the heads of sheep affected with coenurus are very dangerous, but know of only one instance in which a farmer and his wife, who lost much from sturdy amongst their sheep, had tapeworm, and this parasite seems to have shortened the life of the man.

Concerning tænia solium, it is evidently due alone to eating raw pork, and it is very remarkable how many persons contract the disgusting habit of eating meat, and especially pork, raw. When persons say that they are saved from the consequences of accidentally eating diseased meat by cooking, I am often struck with the recklessness of many who do not follow the wholesome rule of having properly prepared and well-cooked food.

The facts that have come to my knowledge, of individuals suffering from tapeworm after eating raw pork, are not few; but as similar ones are very generally known by medical men, I shall mention an instance that struck me much at the time. I called into a butcher's shop in Edinburgh, and was talking to the clerk for some time. I observed this individual pick up bits of fat pork and put them in his mouth raw. I cautioned him, and told him he would be sure to suffer from tapeworm. He exclaimed, "I have never been able to get rid of that, and wish you could give me a cure." Meanwhile he passed his hand up the leg of his trowsers, and seized in his finger an active joint of a tapeworm that he had felt crawling down his leg all the time I had been speaking to him.

With regard to parasitic vegetables inducing disease in man, we have few facts. Cattle suffering from ringworm—a very common disease, especially attacking the head—are apt to induce eruptions and boils on the hands and arms of persons who attempt to clean the skins. These attacks are due to the trycophyton tonsurans.

I have not alluded to the flesh and milk of animals suffering from many diseases, and liable to many sources of deterioration not included under the five heads I have just considered. I trust that I have said sufficient to show the importance of more attention being paid to the whole subject in this country. The active traffic in diseased animals, the imperfect system of inspection of meat by non-professional men, the uncontrolled trade in milk from whatever source it may come, demand investigation, and the adoption of measures to protect the public interests in a pecuniary as well as in a sanitary point of view. I might be tempted to enlarge on the general question, but assured that I can say little that may tend to increase the sense of its importance with medical officers of health, I can only add that we should err on the safe side, and be a little too stringent, rather than, as we are at present, perfectly reckless concerning the nature and supply of animal food, either in the shape of meat or milk.*

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* The above concluding paragraph bears rereading. I have transferred the whole of Mr. Gamgee's paper from the *Edinburgh Veterinary Review and Annals of Comparative Pathology* (May, 1862,) to the pages of the MONTHLY, with the double view of calling attention to the able discussion of a question deeply interesting in itself to every physician, and indeed to every intelligent citizen, and of awakening in the mind of the reader some thoughts on the pressing necessity of Sanitary Reform in our midst. Sad is it, indeed, to reflect how little is done among us to guard the health of the people, to exclude the avoidable causes of disease! Shall there ever be a change? Efficient legislation must be preceded by enlightened public opinion; and to the education of the public to appreciate the needs of sanitary reform every physician can and should contribute his mite. L. E.

REVIEWS AND BIBLIOGRAPHY.

The Principles and Practice of Obstetrics. By GUNNING S. BEDFORD, A.M., M.D, Professor of Obstetrics, the Diseases of Women and Children, and Clinical Obstetrics, in the University of New York; Author of "Clinical Lectures on the Diseases of Women and Children." Illustrated by four Colored Lithographic Plates and ninety-nine Wood Engravings. Second Edition, carefully revised. New York: William Wood, 61 Walker Street. 1862. 8vo. Pp. xxxii. and 731.

We have been in a position to observe the reception by the Medical Press and the Public of the work, the second edition of which we have here before us. Its sale during the six months that have elapsed since the day of first publication has been unexpectedly and extraordinarily large, which certainly is the more remarkable "in view," we now quote from the author's preface, "of the unhappy and disturbed condition of the country, and the consequent derangement of commercial as well as of scientific pursuits." The notices in the journals have been, without exception, extremely commendatory of the author, the book or both; some of them, indeed, containing, we think, almost fulsome flattery. To our certain knowledge the work has in some quarters completely taken the place of other books on the same subject; and altogether we cannot but believe that it really will be for a longer or shorter period of time the "*instructor, guide, and authority*" of American practitioners. Yet, strange to say, it has not elicited, if we except one or two instances in which details have seriously been entered into, a single analytical, much less scientifically critical, review. Why is this? The shrewd reader will perhaps construct an answer to suit himself; but we confess we cannot give one that is satisfactory to ourselves. At any rate, we propose to present an exposition, both subjective and objective, which, though it do not itself come up to the requirements of a thorough Review, nor, from want of space, take up but perhaps the moiety of the chapters individually, will at least show the grounds for the opinions we entertain of the work.

The Preface, still more directly than the title, promises us a "complete," "thorough," and "rigidly systematic" treatise—one, too, composed with the "one cardinal object—to be useful." On examining the Contents, the first thing that strikes us is the form adopted, viz., that of Lectures. This form has been held usually to interfere both with methodical detail and the completeness necessary to exhaust a subject; "but, on the other hand, the reader seems to be brought into closer relation with the writer, more into the position of a hearer; he is more easily carried step by step into the subject; his attention is better fixed, his mind less easily fatigued, and special points of pathology, diagnosis, or treatment, are more strongly impressed upon his memory." On the whole, we greatly prefer this form for all text-books. It was in this form that Watson and West, the two "Macaulays of Medicine," achieved their greatness; and our author has already, in his *Clinical Lectures on the Diseases of Women and Children*, proved himself also a successful writer in this style, combining pleasure with instruction, and leading the pupil, in spite of the old proverb, along a royal road to learning. The way the book opens we regard, every way, a model. We shall give the reader a chance to judge for himself.

"LECTURE I.—*Gentlemen:* The science of midwifery, so far as it relates to the expulsion of the child and its appendages through the maternal organs, is an exact science. Expulsion is both a physiological and mechanical act, and is the product, in part, if I may so term it, of a play of certain physical principles. What, in fact, is a natural delivery, but the operation of a motive-power acting on a body with the view of causing its passage through a given space? This motive-power is the contracting womb; the body is the fœtus; the space consists of the bony pelvis, and the various soft parts directly connected with the parturient effort. But no force which the uterus can bring to bear will enable it to accomplish the delivery of the child, unless there be a proper proportion between the fœtus and the organs through which it has to pass; and, therefore, it may be asserted, that the natural expulsion of the child through the maternal organs is the result of adjustment; or, in other words, of a correspondence between the various portions of the fœtus, and the canal through which it makes its exit.

"If this be so—and the further we progress in the investigation of the subject the more convinced will you become of the truth of the proposition—it follows, as a necessary consequence, that the paramount duty of the obstetric student is to study nature, and understand the admirable mechanism she has instituted for the purpose of securing to the child a safe transit through the maternal passages. With a knowledge of this mechanism he will be enabled, when nature is contravened by circumstances beyond her control, to act as her substitute; and, by judicious interference, to save the lives of both mother and child. Without this knowledge, on the contrary, his interference would be criminal; for it could lead to nothing short of disaster or death. Allow me, then, thus early, to urge upon you a profound respect for nature; her temple is the proper place for the student of midwifery; there it is that she discourses most eloquently, though silently, and the best obstetricians will be those who have worshiped the most zealously at her shrine. Our science is but the portrait of nature, and the fidelity of the picture is commensurate with the skill of the artist."

The groundwork of all positive knowledge in Medicine, anatomy and physiology of the parts concerned, is then philosophically entered upon. The description of the pelvis, its position in the human skeleton, the individual bones composing it, with all the practical applications deducible from such description, the author presents very accurately, and with great perspicuity.

" *Gentlemen*—In the preceding lecture your attention was directed to the consideration of the bones of the pelvis; and having described, in detail, the peculiarities of each of them, it now remains for me to show you in what way nature has provided for their solid union, so that, in the aggregate, they may exhibit a power of resistance absolutely essential for the adequate discharge of their various functions. It is only necessary to reflect for a moment on what is required of the pelvis, to appreciate that, for the proper performance of its duties, great solidity is needed. In the first place, not to speak of its offices at the time of parturition, it is the foundation of the trunk, sustaining, through the articulation of the spinal column with the sacrum, the superincumbent weight of the body, which, in the standing position, is transmitted to the inferior extremities, and, in the sitting, to the tuberosities of the ischia. The pelvis is also called upon to afford accommodation and protection to its viscera, viz., the uterus and its appendages, together with the rectum and bladder. Another important office is to receive the attachments of muscles, the object of which is to produce different movements of the trunk and lower extremities. Again: it has to sustain itself against the resistance offered by the lower extremities in the support they afford to the weight of the body. You see, therefore, without adequate provision for the proper binding together of the individual bones, how incompatible these duties would necessarily be with the integrity of the pelvis."

Thus the first subject of the second lecture is introduced, *i. e.*, the description of the articulations or joints of the pelvis; after which, the interesting questions are discussed, Do these articulations during pregnancy become relaxed? And, Is their separation necessary, at the time of labor, for the passage of the child? The author gives his assent to the first, but decidedly negatives the second query. The lucid explanation of the geometrical divisions and relations of the pelvis, with the differences in these respects between the male and the female, the newly-born and the adult, makes this chapter, in connection with the two following, one of the best and most important, in our estimation.

Pelvic straits, planes, axes, points, curves, arcs, diameters, etc., usually, to the student without mathematical education, stumblingblocks that he never satisfactorily passes, are here entirely brought within his grasp.

This judgment may be extended, almost without modification, also to the regions, diameters, circumferences, extremities, sutures, fontanelles; movements, presentation, and positions of the fœtal head. Our author of course assents to Nægele's views in relation to the latter subject, these being now generally received by obstetricians; he also very properly rejects the third and sixth of Baudelocque's vertex positions from his classification, on account of their really exceptional occurrence; but we cannot agree with him in regarding his order one "to avoid confusion." On the contrary, we would decidedly suggest to him to transpose his second and third positions. An arrangement according to their frequency, instead of confusing, would materially aid the learner, and our author would have been at liberty to omit the confusing foot-note on page 43.

Truly, what a knowledge of the points of the compass and the means of ascertaining them is to the navigator, that is the appreciation of the mechanism of parturition to the obstetrician, and we gladly pronounce the space in Lecture IV. devoted to this subject well occupied.

> "When you enter the lying-in chamber," says our author in conclusion, "your presence will involve one of two things: either you will be there as a silent spectator, an admiring witness, if you choose, of the consummate skill displayed in the achievement of the parturient process, or it will devolve on you to give assistance, because of the intervention of some influence which has paralyzed nature, and forces her to seek at your hands the needed succor. How, permit me to ask, can you render aid, with any well-founded hope of success, unless your minds be previously imbued with the mechanism by which, when not interfered with, the delivery of the child is accomplished? In one word, gentlemen, in affording this assistance, you become nature's substitute; but to be her substitute, in truth and in effect, you must have been her disciple, and learned, from her own teachings, the series of processes which, in the aggregate, make up what is known as the mechanism of labor. In this way only can you aid her, when subjected to influences which she herself cannot resist."

He then adds by way of practical illustration an imaginary case of labor, which, though it perhaps sufficiently impresses his meaning, we would much have preferred to be one of more frequent occurrence, that might easily have been made to illustrate as well, if not better, the full force of his arguments.

In the fifth Lecture, pelvic deformities are taken up: their varieties, causes, resulting dangers, &c. As an example of the author's completeness and yet conciseness, in practical detail, we quote:

"A pelvis may be said to be deformed when its dimensions are either above or below the ordinary standard; hence these deformities are divided into two classes: 1st, Increased capacity; 2d, Diminished capacity. You might very naturally suppose that the larger the pelvis, the greater the facility for the transmission of the child, and, therefore, perhaps, be inclined to doubt the propriety of denominating a pelvis, with increased capacity, a deformity. It is, indeed, true that, so far as the mere passage of the child is considered, the facility of transmission is usually enhanced in proportion to the increase in the size of the pelvis. But this facility, it must not be forgotten, is too often purchased at a heavy cost, entailing upon both parent and offspring the most dangerous results. I have described to you a normal or standard pelvis, and you now appreciate the provisions nature has made for the safe delivery of the child through it. Fortunate would it be if there were no departure from the natural dimensions of the fœtus and pelvis, for then the parturient woman would be spared the anguish and danger incident to those disproportions, necessarily arising from an increase or diminution in size of one or the other.

"When a pelvis is deformed in consequence of an *increased capacity*, the female encounters other troubles than those connected with parturition. For example, as the direct consequence of an augmented space, she would be very likely to suffer from malpositions of the uterus, such as prolapsion, anteversion, or retroversion, and the bladder itself might become displaced.

"During pregnancy, also, a deformed pelvis, from enlarged capacity, will involve more or less inconvenience from the various displacements to which the uterus is liable. One of the ordinary consequences of this species of deformity will be the descent of the fœtal head into the pelvic cavity during the latter weeks of gestation, bringing with it the inferior segment of the uterus, which can readily be detected by the finger. From this circumstance there will arise various morbid phenomena, such as unusual bearing-down, constipation, troubles in micturition, either retention or a frequent desire to pass water, together with more or less distress in the thighs, the result of pressure on the pelvic nerves. But the greatest evils to be apprehended from an enlarged pelvis are more or less connected with the act of childbirth itself. For example, a too sudden expulsion of the fœtus may result seriously in several particulars, viz.: inertia of the uterus, with flooding, may occur; or, if the umbilical cord be naturally shorter than usual, or curtailed of its ordinary length by being encircled around the neck or other parts of the fœtus, it may become ruptured in some portion of its extent, or torn from the umbilicus of the child, or from its attachment to the placenta; if neither of these accidents should ensue, the placenta itself may be suddenly detached from the uterus, or this latter organ become inverted, in consequence of the resistance of the after-birth to the sudden traction of the cord. In addition, there may be the hazard of rupture of the neck of the organ, from its too rapid dilatation. The occurrence of one or other of these accidents would be followed by more or less peril.

"It is obvious, from what has just been said, that a patient with this class of pelvic deformity should, at the time of labor, be strictly confined to the bed, and on no account permitted to walk about the room, for the reason that the probability of any of these complications would be greatly enhanced during the act of progression. The patient should be instructed to make no effort during a pain; and the vigilance of the accoucheur will be needed, in order that early and efficient support be given to the perineum, to protect it against rupture from the sudden exit of the fœtus.

"The pelvis may be *diminished* at the superior strait, at the inferior strait, or in the excavation. This diminution may exist simultaneously in these three portions of the pelvic canal, or only one portion be curtailed of its usual capacity; while the other two will present their normal dimensions. For example, the two straits and excavation may be so diminished in size, as to render it physically impossible not only for a living child to pass, but impossible, also, for the child to be extracted in fragments, when subjected to the operation of embryotomy. Again, there may be no deformity at either of the straits, but the excavation abridged by the growth of an osseous or fleshy tumor; the excavation and upper strait may be normal, while there exists at the inferior strait a diminution, which will render it impossible for a living child to be extracted, or at least protract considerably the ordinary duration of labor. Now, the very converse of this will sometimes occur—the superior strait may be so curtailed as to prolong the labor at its commencement, while the inferior presents its usual dimensions, and will afford ready exit to the child.

"Whatever may be either the inconveniences or evils to be apprehended from a deformed pelvis with an *increased capacity*, they are immeasurably insignificant in contrast with those more formidable ones, necessarily connected with a pelvis, whose capacity is diminished. In this latter case oftentimes arise some of the most important questions connected with the practice of midwifery—questions in which the judgment of the accoucheur will be severely tested, and his feelings deeply touched. It is in instances like these in which you will be called upon to decide the issue of life or death—whether a child known to be alive in its mother's womb shall be sacrificed, or whether, with a view of equalizing the chances of survival between parent and offspring, the mother shall be subjected to an operation, which will necessarily involve her safety in the most alarming peril. These points, however, will be fully discussed under their appropriate head, when speaking of operative midwifery.

"I shall not, gentlemen—for I do not think it necessary—enter upon a minute description of the various pelvic deformities enumerated by authors; I prefer to give you some general facts upon this subject, so that you may deduce from them practical lessons, which will serve you in the lying-in chamber. Your minds cannot be too well stored with facts, provided they are tangible, and made subservient to your requirements in the hour of danger. Theory and scholastic classifications may appear well enough in books; but if these books be intended to aid the practitioner in the sick-room, they would, in my opinion, have more effectually accomplished the object by elaborating what is really practical, and substituting for mere hypothesis and unprofitable lore, sound and truthful principles, which will not only abide the test of the bedside, but will constitute so many lights to guide the medical man, when surrounded by embarrassment, or lost for the time in obscurity."

And, accordingly, the author does give us practical lessons that will be read by young and old practitioners with profit. At the end of this chapter, he pronounces Baudelocque's pelvimeter the best, most accurate, and most reliable instrument—here we do not agree with him—but considers for the internal measurement, the very best pelvimeter "because it is the most searching in its explorations, and the most positive in its results:" the finger of the well-educated accoucheur—herewith we do agree.

Lectures VI. and VII. are respectively occupied with the description of the female organs of generation and the discussion of menstruation, the subjects being treated of in their social and philosophical as well as medical and medico-legal bearings. It seems unnecessary for us to review in detail the particulars touched upon. Suffice it to say, that we cannot find a single chance for bringing in a practical hint unimproved; and any one never before acquainted with obstetrical matters who reads only the first seven chapters, as we have just done, will be put in possession of certain enlarged views as to the science and the art, and of important information on "little points" of fact and of "explanation of action" frequently unattained by others after years of study and experience.

"*Reproduction*" is the superscription of what follows. Reproduction is properly defined as implying "the development of a being, so that it may be capable of an external or independent existence;"—"hence it consists of a series of processes, which, when completed, constitute the entire reproductive act."

"The first of these processes, in the human species, is the contact of the two sexes, known as copulation. The second process is fecundation, which consists in the exercise of a vitalizing influence, through the male, on the germ furnished by the female. This act of vitalization, or imparting life, gives rise to another process, conception. In strict physiological truth, it may be said the male fecundates, and the female conceives. Then follows gestation, during which the embryo grows and becomes developed; and when its development has been sufficiently accomplished, labor occurs, the object of which is to expel it from the uterus. As soon as this is effected, the entire relations of the new being are changed. It breathes, and, therefore, has a circulation of its own. It is no longer dependent upon its parent for the elaboration of its blood; its lungs, which, before birth, were without function, commence at once their round of duty; the first gasp of the infant may be considered its declaration of independence.

"Its organic existence is now called into action; it receives food, which, through the operation of its digestion, is converted into chyle; this latter passes through the thoracic duct into the venous system, whence, by the ascending and descending venæ cavæ, it is conveyed to the right cavities of the heart, and thence to the lungs, where, through the elaborative action of these organs, it becomes decarbonized, or, if you choose, arterialized; it then is taken to the left cavities and distributed, through the ramifications of the aorta, to all portions of the system, imparting nutrition and development to every tissue."

And in less than ten pages, the author presents in the most intelligible manner possible, the accepted facts of science in relation to fecundation and conception, topics ever full of interest, and probably never to be altogether free from mystery.

Thus the road is cleared, as much so as the actual state of human knowledge at this very hour admits, to the consideration of the two great themes of the volume—PREGNANCY and LABOR. Now comes the question whether the "Great Expectations," which the author's masterly approach to these subjects necessarily inspire, can be realized by remaining in his company to the end. On looking over the pages ahead, a feeling comes over us which, if it have weighed strongly upon others, may explain the rarity of journalistic criticism on the work spoken of in our introductory paragraph. It is a desire to throw away for the once the critic's pen, and assume the more humble, yet it seems more fitting task, of reader and student. There is, indeed, here but little for the reviewer to do. The author himself has played the *rôle* of reviewer to perfection, yet without surrendering his claims to individuality, originality and authorship. The work, the more we study it, leads us the more to appreciate the amount of research and labor expended upon its production. We must candidly confess it would take us more time, as well as occupy more space than we have at command, to look up with the author the sources whence the true building materials for the existing state of science have been derived; while, aside from the innumerable incidents of personal experience and examples of "conduct," communicated in the colloquial, circumstantial, graphic, and happy manner of no less a conscientious teacher than congenial companion,—conclusions and results on every point of obstetric practice, drawn discriminately with clinical as well as critical acumen from the literature of the whole world, are stated with conciseness, in harmony with clearness and fullness.

"The Young Accoucheur's *Début* in the Lying-in Chamber," Lecture XXV., for example, will be hailed as a very God-send by every incipient practitioner who has an idea, or may already have experienced something of the embarrassment and quandary, the little perplexities and real difficulties, usually inseparable from the first obstetrical visit, especially if by chance it occur in a family belonging to the higher ranks of society. Critics who may have forgotten their own early trials, or who, from other causes, cannot realize the student's wants, may look upon much that the author presents, (and presents evidently *con amore*, and certainly with tact,) as trivial and unsuitable in a scientific treatise; but the work bears intrinsic evidences of the stand-point from which it is put forth, and these very "trivial" minutiæ, little things, upon which, indeed, success in after-life most often depends, must inevitably make it the most favorite, as it is the best, *text-book* in the language.

The two main themes are thus laid out:

I. "PREGNANCY may be defined to be that condition of the female which exists from the moment of fecundation until the exit of the child from the maternal organs. It is divided into *true*, *false*, *uterine*, *extra-uterine*, and *interstitial*. In true pregnancy, there is really a fœtus; in false, the enlargement is dependent upon something other than a fœtus: when the product of conception is situated within the uterus, the gestation is called uterine; when, on the contrary, the fœtus is lodged externally to this organ, it is known as extra-uterine, of which there are three varieties, viz., abdominal, fallopian or tubal, and ovarian. In the first of these varieties, the embryo, under a rule of exception, does not reach the uterus, and becomes developed in some portion of the abdominal cavity; in the second, in the fallopian tube; and in the third, it receives its growth in the ovary. We shall hereafter have occasion to describe more particularly each of these varieties.

"There is another form of gestation in which, strictly speaking, the fœtus is developed neither *within* nor *without* the uterine cavity; and you may well ask—How is this? It is called *interstitial* pregnancy, for the reason that the fœtus does not rest under either the peritoneal or mucous coverings of the uterus, but is found amid the meshes of muscular fibres of the organ, and hence the propriety of its name—*interstitial*. There have been many attempted explanations of the manner in which the fecundated ovum finds its way into this intermediate structure, but none of them are satisfactory, for they do not seem to be founded on correct data.* The cardinal fact, however, that interstitial pregnancy does sometimes exist, cannot be denied, for it has been recognized by several trustworthy observers.

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* One author, Breschet, says, that if any obstacle should oppose the ovum in

"In addition to the varieties already enumerated, pregnancy is divided into *simple, compound* and *complicated.* In the first, there is but one fœtus; in the second, there are two or more; while in the third variety, besides a fœtus, the gestation may be complicated with an abnormal growth, such as a polypus, fibrous tumor, or ovarian enlargement."

II. "Labor, for all practical purposes, is either *natural* or *preternatural.* Natural labor, we denominate that form of parturition in which delivery is effected by the unaided efforts of nature; or, in other words, without the assistance of art. But, in order that nature may be thus adequate to the discharge of this duty, certain conditions are demanded both as regards the mother and child, and these conditions we shall enumerate in detail hereafter. Preternatural labor, on the other hand, as its name implies, is contrary to the natural process, and therefore needs the interposition of science. It may be divided into *manual* and *instrumental;* in the former the introduction of the hand is necessary to overcome the obstacle; in the latter the hand being insufficient, the employment of instruments is indicated. Instead, therefore, of calling labor tedious, complicated, laborious, or difficult, after the example of most writers on this subject, we propose to discuss the various topics and duties connected with human parturition, under the two divisions of *natural* and *preternatural* labor—divisions which will not only be recognized as just in the lying-in chamber, but which will embrace every possible contingency that may arise during the parturient effort.

"Natural labor, when accomplished, may be said to be the separation of the mother and fœtus; it is the transmission of the latter through the maternal organs, in order that it may enjoy an independent existence, for which its previous uterine development has prepared it. Its organization is now so complete, that, when thrown into the world, it can breathe, and elaborate its own blood; it is no longer dependent upon the functions of the placenta; in a word, its birth constitutes it physiologically an independent being. This expulsion, however, of the fœtus and its annexæ from the parent womb is not a sudden and abrupt act—on the contrary, it is a deliberate effort on the part of nature—made up of a series of successive processes which, when in completion, constitute parturition. It is this very succession in the order of phenomena which guarantees safety to the child and immunity to the mother; so that, under ordinary circumstances, natural labor may be regarded as one of the functions of the female economy, in no way necessarily compromising human life; and I am quite certain that it is to 'meddlesome midwifery' that much of the fatality of the parturient chamber is to be imputed.

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its entrance into the uterus, it might glide into some one of the venous sinuses, which, he maintains, are found to open at the origin of the fallopian tubes. The existence of these sinuses has never been demonstrated, and it is now admitted that this eminent anatomist was in error.

"The usual processes to which I allude as connected with the accomplishment of labor are, in the order of sequence, as follows: 1st. The uterus contracts, the result of which will be to dilate the mouth of the organ; 2d. The membranous sac or 'bag of waters' is formed, and becomes ruptured, affording escape to the liquor amnii; 3d. After the escape of the amniotic fluid, the uterus grasps more firmly the body of the fœtus, resulting in an increased expulsive force, which accomplishes its delivery; 4th. The placenta and its annexæ—the cord and membranes—are then expelled; 5th. There is for some days a discharge from the vagina, known as the lochia. These, therefore, make up the chain of acts, or processes, which, in the aggregate, constitute childbirth, when accomplished by nature herself. Does not this very order of phenomena inculcate upon the obstetric student the order of his duties? It should emphatically impress upon him the necessity of studying nature in her own inimitable ways, so that when she is embarrassed by circumstances which she cannot control, he may be there to act as her substitute, and render the needed assistance."

That pregnancy is not a pathological condition, but that, "as a general principle, it is entitled to be denominated *a period of increased health*," is well insisted on. Our author continues:

"Pregnancy, although not a condition of disease, is one of excitement, in which the entire economy more or less participates; and to show you how emphatically and promptly the system responds to the changes induced by impregnation, it may be mentioned that oftentimes, with the quickness of thought, constitutional sympathies, more or less marked, supervene on the act of fecundation; it is only necessary to understand why this is so, in order that you may appreciate, and, at the same time, see in these sympathies an evidence, not of a pathological state, but an evidence that a new link has been added to the chain of phenomena which nature recognizes as rightly belonging to her."

The various changes in the uterus during pregnancy, the constitutional sympathies,* the changes which the blood undergoes, with the modifications in the urinary secretion, etc., are then taken up in detail, and the conclusion is arrived at that the type of all the changes is, as a general rule, in exact relation with the demands of nature for the accomplishment of the great and mysterious object in which she is engaged—the reproduction of the species. Here, again, the author carefully adds :

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* In a foot-note the author says: "I am so well satisfied of the importance, so far as a healthy gestation is concerned, of the two phenomena—nausea and vomiting—and so truly do I regard them as necessary links in the chain of processes instituted by nature for the successful accomplishment of the work of reproduction, that, when these phenomena are absent, I invariably have recourse to minute doses of ipecacuanha for the purpose of inducing an irritable condition of the stomach. In more than one instance, I have succeeded in this way in carrying ladies to their full term, who had previously miscarried—and in whom, on inquiry, there could be detected no cause for the miscarriage *except that they had experienced neither nausea nor vomiting.*"

> "You are not, however, to understand me to say, that pregnancy is not oftentimes complicated with disturbed action, amounting to disease, which will require all your vigilance, and a full measure of skill, to arrest it. The very vomiting to which we have alluded as, under ordinary circumstances, constituting one of the physiological phenomena of gestation, sometimes places in such imminent peril the safety of the mother, that it not only requires the interposition of the accoucheur, but at the same time presents for consideration one of the gravest topics in the whole practice of midwifery, viz., *premature artificial delivery.*"

The question—*How are we to know that pregnancy exists?* now naturally presents itself. The importance of the question from scientific and practical, from moral, social, and medico-legal points of view, is pointed out, and impressively illustrated by a sad case which some years since occurred in the author's practice, in which an erroneous opinion rashly pronounced by other medical men, "consigned to an early grave a pure and lovely being, and broke the very heart-strings of a devoted and confiding parent." Lecture IX. thus concludes:

> "Let me, then, gentlemen, by every sense of duty, by the very love which should animate you to become, in these trying emergencies, the firm and uncompromising dispensers of rigid justice; let me, I repeat, by these considerations, urge you to a faithful and devoted study of the means by which alone you will be enabled to arrive at positive conclusions upon this momentous question. The entire investigation is simply one of evidence, and what is most needed, will be to separate true from false testimony; to bring yourselves to the consideration of the subject with but one object in view—the elucidation of truth. With preconceived opinion, or with prejudice, you have nothing to do. Let your minds, in the examination of this question, be 'like a sheet of white paper,' with no bias for or against; and let it be your inflexible resolution to decide by the testimony, so help you God!"

The nature and value of the evidences of gestation are then very thoroughly examined. They are divided into (1.) Presumptive; (2.) Probable; and (3.) Positive and unequivocal. Under the first head, the suppression of the catamenia; nausea and vomiting; depraved appetite; changes in the breasts—the secretion of milk:—under the second head, the areola; changes in the uterus and abdomen; the positions of the gravid uterus—its descent during the first two months, its emergence from the pelvis, its right lateral obliquity, etc.; changes in the direction of the urethra; œdema of lower extremities; changes in the cervix uteri, (and among these, "a peculiar moisture of the two lips," which, according to the author's experience, is a constant accompaniment of pregnancy;) shortening of the cervix; development of the uterine annexæ and external genitalia; discoloration of the vaginal walls:—and under the third head, quickening, the passive movements of the fœtus; ballottement or repercussion; pulsations of the fœtal heart; the uterine murmur; and pulsations of the umbilical cord:—all these, and collateral points of interest connected therewith, receive in the next three lectures full attention; their different grades of value, and the various shades of significance of each individually, or a number of them combined, being most carefully, and in a plain and attractive manner, weighed. In Lecture XIII. a brief but adequate description of the mode of examining a female for the purpose of ascertaining the existence of pregnancy, is presented; in Lecture XIV. a similarly brief but also satisfactory account is given of the varieties of extra-uterine pregnancy before indicated; and in Lectures XV. and XVI. the diseases of pregnancy are treated in the same manner.

The annexæ or appendages of the fœtus, and fœtal nutrition, growth and development, with all the interesting physiological questions involved in the consideration of these subjects, are next treated of by the light of the most recent and accurate investigation, with a minuteness and clearness which, in view of the small compass in which they are compressed—24 pages—are surprising.

Lecture XIX.—on abortion, from p. 266 to p. 283—the reader must read to appreciate. It contains *all* that the *educated practitioner* cares to know. To give those capable of judging an idea of its contents, we add the chapter headings:

"Abortion—Its Frequency—Loss occasioned by it to the Human Family—Dr. Whitehead's Statistics—The various Divisions of Abortion—Viability of the Fœtus—The Case of Fortunio Liceti—At what Period of Gestation is a Female most likely to Abort?—The Opinion of Madame La Chapelle—Not sustained by general Facts—Abortion more frequent in the Primipara—Why?—Reflex Action—Whytt—Reid—Prochaska—Marshall Hall—Concentric and Eccentric Nervous Influence—What does it mean?—Eccentric Causes of Abortion—Hæmorrhoids, Strangury, Tenesmus, Sea-Bathing, etc.—How do they Produce Abortion?—Irritation of the Mammæ and Premature Action of the Uterus—Cause and Effect—How explained—Lactation, its Influence on early Contractions of the Uterus—Centric Causes of Abortion—Anæmia and Abortion—Exsanguification and Convulsions—Experiments of Sir Charles Bell and Marshall Hall—Experiments and Deductions of Dr. E. Brown-Séquard—Mental Emotions, Syphilitic Taint, Death of the Fœtus, all Causes of Abortion—Disease of the Placenta and Abortion—Abortion sometimes the Result of Habit—Phenomena of Expulsion in Abortion—

The Pain and Hæmorrhage of Abortion—How distinguished—Treatment—How divided—The Application of Cold—Its Mode of Action in Arresting Hæmorrhage—Tampon and Ergot—When to be Employed—Two-fold Action of Tampon—Extracting Placenta in Abortion—Exhaustion from Hæmorrhage—How Treated—Laudanum, its Efficacy in Exhaustion."

Let us next turn to the Induction of Abortion, which, with the whole subject of premature artificial delivery, is treated of in Lecture XLIII., pp. 665–680. Is abortion under any circumstances a justifiable alternative?

"This question has been much controverted, and it is one on which the sentiment of the profession is not concurrent. In order that the special points in the discussion may be fully appreciated, they may be advantageously presented under the two following heads: 1st. When the maternal passages are so contracted—no matter from what cause—as to render it certain that a *viable* fœtus cannot be made to pass. 2. When the maternal passages are normal, but the mother's life is involved in alarming peril by the occurrence of some serious complication, such as convulsions, hæmorrhage, or excessive vomiting. It is manifest that the moral part of the question turns upon the simple interrogatory—Is the embryo in the earlier states of its existence a living being? All correct physiology demonstrates that it becomes in truth, at the very moment of fecundation, imbued with vitality—the contact of the sperm-cell and germ-cell constituting the *act of the breathing of life.*

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"Assuming, therefore, as an incontrovertible fact that the human embryo is in reality a living being, the suggestion naturally arises—Are we justified, and, if so, under what circumstances, in depriving it of its life? It is quite certain that the only plea for such an alternative is the safety of the mother; and as to the force of this plea there has always existed a difference of opinion. Here, then, we have the naked question—a woman is pregnant, carrying within her a living being—her pelvis is so abridged that it will be physically impossible to afford exit to a *viable* fœtus, and, consequently, if she proceed to her full term, the only chance of rescue will be the Cæsarean section or embryotomy. Now, I repeat, what, under these circumstances, is the duty of the conscientious accoucheur, who is not actuated by a thirst for innocent blood, but who is most anxious to discharge with fidelity the sacred obligations which his profession imposes upon him?

"I cannot undertake to determine this question for others—it is one which must be left to conscience and a sincere desire, as far as may be, to do what is right. But, in no event, should a decision be arrived at without first invoking the aid of wise counsels, and duly considering all the surroundings of the case.

"On the other hand, suppose the instance of a pregnant woman, with a perfectly normal condition of the maternal organs, but who has not yet attained that period of gestation at which the child is viable

—and she should suffer from some serious complication which would subject her, according to all human evidence, if not delivered, to the loss of her life—what, in this contingency, is the course to be pursued? Here, in my judgment, the *morale* of the case is greatly changed; for should the mother sink, in consequence of not being delivered, her child, also, must of necessity be sacrificed. Therefore, under these circumstances, if my convictions as to the danger to the mother were beyond a peradventure, I should not hesitate to induce abortion upon the broad ground that, *without the operation two lives would certainly be sacrificed, while, with it, it is more than probable that one would be saved.*"

All this we are willing to subscribe to; although the author's "broad ground" might occasionally be trespassed upon for base purposes! When the fœtus is viable, there certainly are circumstances under which the induction of premature artificial delivery is "one of the most precious boons." These various circumstances, the periods at which the operation should be performed, its history, its objectionable features, its indications and its statistics, are ably expounded. Of the statistical results it is said:

> "It will be thus perceived, that in premature artificial labor, considerably more than one-half of the children are rescued, with the insignificant mortality of one in fifty of the mothers! Admitting, therefore, that this operation should be had recourse to under circumstances fully justifying it, it cannot, I think, but be regarded as one of the brilliant substantial triumphs of science, opening to the contemplation of the conscientious accoucheur a gratifying and cheerful vista, and, at the same time, closing up an avenue which has proved so destructive to human life."

Of the author's discussion of the various modes of operating we cannot speak as highly as of his practical precepts on almost every other subject. Although he enumerates, 1. The perforation of the membranes, for the purpose of affording escape to the liquor amnii; 2. The administration of ergot; 3. The dilatation of the os uteri by means of prepared sponge, known as the method of Kluge and Bruninghausen; 4. The method of Kiwisch, consisting of vaginal injections; 5. The vaginal tampon; 6. Cohen's method, consisting of injections into the cavity of the uterus; 7. The injection of carbonic acid into the vagina; 8. Galvanism as suggested by Dr. Radford; briefly takes up each; and pronounces Kiwisch's method—the water-douche—as "perhaps, under ordinary circumstances, the safest and most reliable of all the plans yet proposed;" we say, although he does all this, yet in answer to the student's question, "How shall I proceed?" his description in detail is less instructive than usual with him. We agree with Dr. Robert Barnes in regarding all labor-inducing agents from a practical or therapeutical point of view, as, A. Preparatory; B. Labor-provocative; and C. Labor-accelerating measures, and believing that in the majority of instances it is desirable not to trust to any single agent or method, but to proceed in regular gradation through the stages of preparation of the system, and of the passages concerned in parturition, the evocation of the contractile energies of the uterus, and the acceleration of delivery, selecting such means in each stage as are most suitable; and, altogether, we think our author's description would have been more thorough, more scientific and more practical, if he also had followed Dr. Barnes.

A capital prelection on Molar Pregnancy (in which the testimony of science is brought to bear to explain the subject of Galen's allusion to hens who "will occasionally lay eggs without the tread of the cock") finishes the first of the two main themes; and a logical disquisition on the advent of labor—or rather, on the duration of pregnancy, and the signs and causes of its natural termination—forms the bridge to the second. In relation to our author's answer to the question, "What is the determining cause of labor, or what is it that first induces these independent movements in the muscular tissue of the uterus?" some of the reviews that we have seen question whether it is "anything more than the assertion of an evident fact," *(Boston Med. and Surg. Journ.,)* and think that he "has rather begged the question, than answered it satisfactorily."—*(British-Amer. Journ.)* Let us see how this is. In the first place, he critically examines, and certainly refutes, the doctrines heretofore relied on in explanation of the phenomenon. The erroneously supposed analogy between the human embryo and the chick, which latter is well enough known to break its shell as soon as the period of its incubation has been completed, is alluded to, and among other funny things, a quotation from Harvey is presented, in which it is maintained that "the fœtus itself runs its head against the inclosures of the womb, opens them by its own strength, and struggles into daylight." After showing the futility of the arguments to sustain the idea that the fœtus is in any way concerned in the original impulse to contractile effort, and conceding that the determining cause—whatever it may be—resides in the uterus itself, the author demolishes the theory of the cause being "a cessation of antagonism between the muscular fibres of the neck and body of the uterus," a theory which has received "much countenance from the profession," but "finds no support at the bedside." Next he exposes the fallacy of the opinion that the primary impulse to uterine contraction is due to a structural change of the decidua and placenta, and a loosening or separation of these bodies from the internal surface of the uterus. He then dispatches as untenable the ovarian hypothesis of parturition; and the hypothesis of orificial irritation, though considered at great length, (stated and explained even in the originator's own words,) finally meets the same fate. On seeing one after the other of the doctrines, of which one or the other has been hitherto accepted as the truthful expression of the *primum mobile* of parturient effort, overthrown, we hasten to ascertain what is offered instead.

"I may not," says the author, "be very lucid in the exposition of my notion touching the question—but it does seem to me that there is *a necessary connection between this first spontaneous movement in the muscular walls of the uterus*, and, if I may so term it, a *matured development of the muscular structure of the organ itself.* What I mean by *matured development* is this—from the instant of fecundation the uterus becomes an active centre, the effect of which is an increased nutrition, which results in the growth and development of the various structures composing it. This increase constitutes one of the processes in the interesting scheme of reproduction—and so essential is it that, when interrupted, failure on the part of nature to consummate the act of generation is the consequence. The gradual and successive development of the muscular tissue of the gravid womb has, I think, a marked bearing on the point now under consideration Here, be it remembered, we have this important character of structure, during the period of gestation, constantly receiving through increase of nutrition, increase of volume, and consequently augmented ability for the manifestation of its peculiar function—contractility. If you consider, on the one hand, this fact of increase in development, and, on the other, the interesting circumstance that, as pregnancy approaches its termination, the uterine muscular fibre is, as a necessary result, proportionately gaining in maturity of growth and development—if, I say, you consider all these things, does it not seem within the range of probability that, under the constant influence of nutrition and repose, so far as regards its functional display, the muscular tissue of the gravid uterus becomes, as it were, surcharged—in a word, so full of contractile power, that, in perfect consistency with the general laws regulating the animal economy, it commences its series of acts through which alone the exit of the fœtus, after full intra-uterine development, can be accomplished?

"If I be correct in my exposition of the determining cause of labor, which I have thus briefly presented, it seems to me it must be admitted that the *primum mobile* of uterine action, when gestation has been completed, is a physiological necessity. Under any circumstances, whether the theory be substantial or otherwise, it will, I think, prove not less satisfactory than the opinion of Avicenna—'That at a fixed time, labor takes place by the grace of God.'"

We have really not a little studied and thought over this interpretation of one of the most extraordinary phenomena in physiology. At first we took precisely the same view of it as the contemporaries we have referred to. It was not until after arguing the point with some friends that we appreciated the full compass of the theory; nor did we then abandon our first impression easily, or without entire conviction. After understanding our author's views fully, we endeavored to make them more plain to others, by expressing them in our own words; but found that, after all, the author's language, as quoted above, is best calculated to convey the idea, to any one who will take the trouble carefully and intelligently to peruse it. We therefore now unreservedly agree with the reported judgment of one, himself a *Magnate* in physiology, that the explanation is "*ingenious, plausible, and satisfactory;*" nay, more—we believe that it will be recognized in the future as the nearest possible approximation to the truth that could have been made at this time.

There remains much—almost the whole field of labor, with its operative management—that we have not yet touched upon; but we may have traveled long enough with the author, and shown objective reasons enough for "the praise that has been within us," to enable the reader already to come to a conclusion respecting the merits of the volume before us, although, as to ourselves, we doubt whether the pages of this or any other journal can be filled with matter more interesting or instructive on its subject than select quotations from our author would be; yet we must, while running over the remaining Lectures, (viz.: on the management of the placenta, post-partum hæmorrhage, treatment of the puerperal woman and new-born infant, multiple pregnancy and superfœtation, inversion of the uterus, placenta prævia, puerperal convulsions, manual delivery, instrumental delivery, puerperal fever, puerperal mania, and anæsthetics,) restrict ourselves to allusions to individual points, without very lengthy citations.

To aid in the expulsion of the after-birth, the author very emphatically recommends the introduction of the index finger within the os uteri, for the purpose of titillating it. "This movement of the finger against the cervix," he adds, "evokes the tributary and important action of the spinal cord, and very readily accomplishes the object you have in view, viz.: the contraction of the uterus." We very greatly prefer for the accomplishment of the same object, systematic manipulation through the abdominal coverings; as, f. i., after the well-known method of Credé, which we regard not only as, every way, by far the most unexceptional, but also as the most efficient mode of removing the placenta.

In almost immediate disregard of our resolution, we feel a desire to edify our readers by quoting at length the way the subject of post-partum hæmorrhage is introduced. We must at least cite one paragraph:

> "I wish I had the power to portray, with graphic truth, the lying-in room in a case of perilous flooding. There is your patient, she who has confided her life to your custody—she is delivered of a healthy, living child—her heart is full of a mother's love—and, while extending to you the sincere oblation of her thanks, and, perhaps, in the very act of receiving the tender congratulations of her happy and devoted husband, she is struck with sudden pallor—the gentle smile and beaming eye have given place to the sunken and ghastly cheek; she is speechless and unconscious; she knows not the countenance of the agonized husband, who bends so fondly over her; his voice, once so familiar and welcome, falls without its echo: in a word, that woman is moribund. And all this change is but the work, as it were, of a few seconds. In this terrible emergency, every eye is turned towards you; the hopes of that husband rest upon your instantaneous action. Overwhelmed and torn with grief, in the agony of his distress, he will exclaim, in tones which will reach the very depths of your heart: 'Doctor, doctor, save my wife!' Should you, under this appeal, prove inadequate to the emergency because of ignorance of what to do, that appeal will continue to ring in your ears, it will prove a withering comment on past neglect, and cause you to bewail in tears of blood the fatuity which urged you thus wantonly to sport with human life. But, on the other hand, if the appeal be made to one who is not only fully impressed with the sacredness of the obligation involved in the responsibility of ministering to the sick—to one who, when he assumes the cares of the lying-in room, feels that he is competent faithfully and promptly to discharge his duty; and if, in the exercise of his knowledge, he rescue the patient from her impending danger, and restore her to her husband and child, then he will have accomplished one of the most glorious of all human triumphs."

The fact that the only means of arresting the hæmorrhage is to make the uterus contract—a fact that everybody must know, and that cannot be too often repeated—is sufficiently dwelled upon by the author. Ergot and the tampon are very properly denounced; the first, though provoking contraction, being too tardy where immediate effects must be produced, and while, therefore, there can be no harm in giving it as an adjuvant, it must not be allowed to take the place of other and more reliable means; the latter being entirely rejected, because absurd and dangerous. "In cases of perilous flooding, the two great and efficient remedies are pressure and cold." Compression of the abdominal aorta, properly made, is regarded a sovereign remedy;

and pieces of ice introduced into the vagina or uterus, iced water as a drink, or injected into the rectum, etc., are also recommended. But as to the main means, we must make another short quotation:

> "Therefore, what you are to do in the management of hæmorrhage, is this—introduce your hand without a moment's delay into the uterus, carry it up to that portion of the organ to which the placenta is partially attached, or from which it has been completely separated; with the expanded dorsum of the fingers make gentle but uniform pressure against the bleeding utero-placental vessels, and with the other hand applied to the abdomen, make counter-pressure. Should the womb not contract, have recourse immediately to the cold dash—let a pitcher of ice water be thrown from a height—say two feet—suddenly and with impulse upon the abdomen, and repeat it without hesitation should it be necessary."

We rejoiced to find transfusion of blood recognized as a means of saving life, but sincerely regret that the directions for performing the operation are not, by any means, the most appropriate.*

The next Lecture is again one of those replete with practical information concerning a hundred little things so characteristic of the volume and necessarily most welcome to the beginner in practice. Indeed, the range of subjects is so complete that we were quite disappointed to find no mention made of post-partum thrombus. We doubt not it would need but a suggestion to the author to have this deficiency supplied.

In Lecture XXXI., the various circumstances which may render manual delivery necessary are taken up, viz.: malposition of the fœtus, exhaustion, hernia, prolapsion of the umbilical cord, hæmorrhage, convulsions, and multiple pregnancy. Each of these important subjects is ably and graphically brought before the reader. Dr. Thomas' "postural treatment" for prolapsed funis, which is briefly mentioned in a foot-note, deserves, we think, to have been described at greater length, and in the text.

On Placenta Prævia our author's remarks are particularly sound and judicious. Intelligently, and without prejudice, he has reviewed the various facts observed, doctrines propounded, and controversies engendered; and the position he takes on questions which are, as he says, "to be determined, not by the reasoning of clever minds, but by the positive results in practice, which the future may disclose," is at the very acme of our art at the present day. A most just estimate, in our opinion, is placed upon the tampon, or plug. Further on, version is held to be "the cardinal remedy in placenta prævia, if the head of the fœtus be still at the superior strait, and the mouth of the womb will allow the introduction of the hand; on the contrary, if it should have descended into the pelvic excavation, the indication is at once to resort to the forceps." In effecting the delivery, time—the author continues—is everything. Pass the hand cautiously by the detached portion of the placenta; but "if you cannot detect the point at which the detachment has occurred, then my advice to you is at once to carry the hand immediately through the body of the placenta." Again, as to the placenta, "pay no sort of attention to it; bring down the feet, deliver the child, and then, if the expulsion of the afterbirth should not promptly follow, carry up the hand and bring it away."

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* An account of the proper mode of performing transfusion, and of the indications, dangers, &c., of the operation, has been published in the MONTHLY, January, 1861.—[ED. MONTHLY.]

In the two lectures on puerperal convulsions, modern physiology finds an exponent—if not an accession to its ranks—such as no previous author on midwifery, as far as we know, ever was or attempted to be. Although it were unjust to deny that the spirit of "a sound and rational physiology" breathes through the whole volume, yet here it embodies the constantly accumulating researches by special physiologists in a manner that strikes us with surprise from a busy obstetric practitioner. As to the treatment, he is as discriminating as might have been expected after reading his pathology, consistently opposing "routinism," but nothing is offered but what is generally known.

What the author says of manual labor, pp. 516–564, adequately exhausts the subject for a text-book.

As to instrumental delivery, he does still more. Some questions he discusses with almost monographical completeness. We cannot, of course, follow him into many details. There are some points, however, that we must touch upon.

The author castigates in no equivocal language the practice of those accoucheurs who seem never so happy as when they are mutilating either mother or child, and as emphatically teaches *opportune* interference whenever resort to instruments is needed: *nec temere, nec timide* —neither rashly nor timidly—is the maxim that he impresses upon the reader. He vindicates for the forceps the character of "an instrument for both mother and child," as opposed to the restricted view that it is but "the child's instrument," and refers its true excellence to its action as a *tractor*, without misappreciating its effects as a compressor. His forceps is a very excellent one, and his directions for applying and using it under the various circumstances that may present themselves, are positively invaluable to the student, on account of their completeness of detail, precision, and impressiveness of language and practical utility. We cannot illustrate any of the innumerable good things here presented, but take up the only points on which, in our judgment, real criticism is possible. Among "the elements essential to a successful accomplishment of the operation," we find:

> "15. The force employed for the purpose of delivering the child should be compound, consisting *of two-thirds lateral and one-third extractive;* and with this object, the right hand should, with its dorsal surface upward, be made to seize the handle while the index and middle fingers of the left hand are placed in the two rings of the instrument; occasionally, in the absence of pain, the forefinger should be introduced into the vagina in order to ascertain the progress of the head."

Now, even freely admitting the compound nature of the force in question, to decompose it into "two-thirds lateral and one-third extractive," seems carrying nice mathematical analysis too far—the usual "lateral," transverse, pendulum and rotatory movements, it must be remembered, (1) are perhaps in reality but little more than means of improving the relative position for the more effectual application of the actual force employed, and (2) are themselves executed with some degree of extractile effort; instead of the index and middle fingers, the index and ring fingers (because more nearly of the same length) might be placed in the two rings, and, if possible, the middle finger over the lock in contact with the child's head; but if the middle finger is to be used with the index, the ring intended for the former should be a little higher on the instrument than the ring for the latter; the progress of the head might also be ascertained by having on the blades marks perceptible to the touch.

The amount of force sometimes required to achieve the delivery, which he says the beginner "will be amazed to learn," the author indicates, only by the usual, indefinite, and ambiguous expression, "the strongest arms will occasionally be found almost surrendering to the needed effort." How much more useful, and furthering midwifery as an exact science, would have been an objective expression deducible from the employment of the dynamometer, (which can be easily attached to the "Bedford forceps.") Verily, the student *should* learn the amount of force employed: the collection of the contusions, the mutilations and the slaughters produced by too much "forceps pulling," would probably blacken the darkest page in the history of medical malpractice! But assuredly the precise amount of extractile force employed, can never be learned from the author's teaching on the subject.*

To measure the size and compressibility of the fœtal head during labor being impossible, the most valuable means that we at present possess for the diagnosis of cases necessitating a resort to cutting instruments undoubtedly is the measurement of the maternal pelvis. The author states, as the two extremes, a space of 3⅛ inches for the passage of a living child, and 2⅛ inches to justify embryotomy. The double use of the forceps here, both as a tractor and as an instrument to measure the amount of opposition to delivery, is barely mentioned; certainly not, in our estimation, sufficiently dwelled upon. On the choice between embryotomy and Cæsarean section, the author's teaching is as follows: If the child be dead, perform embryotomy with a contraction between the measurements mentioned, or with even less than 2⅛ inches, down to 1½ inches; but "if the antero-posterior diameter should not afford a space of 1½ inches, even admitting the child to be dead, embryotomy is not to be resorted to, but the alternative is the Cæsarean operation." Except in the latter case, the question of whether the child be alive or dead is the turning-point. "*If*," says he, "*the child be alive, the woman at the completion of her pregnancy, and it be made manifest that the maternal passages are so contracted as to render it physically impossible that a living child can be extracted* per vias naturales, *I should, between the two resources—craniotomy and Cæsarean section—not hesitate to decide in favor of the latter.*"

We suppose we need hardly add that the conclusion here so emphatically expressed—and, indeed, as emphatically announced and taught by the author twenty years ago—is at variance with the general views of the profession on this subject. No reviewer, of course, has authority to "pass judgment" by a mere dictum, but in our own opinion the author, although at present in the very large minority, is *essentially* RIGHT. We certainly agree with him when he says:

> "I am quite confident, if the alternative were more *opportunely* resorted to; if, in a word, the same principle of guidance should obtain in reference to it, which we find to constitute the rule of action in all capital operations, the result would be vastly different; and I have no hesitation in saying that, under these favorable circumstances, the Cæsarean operation would not only prove to be infinitely less destructive to human life than craniotomy, but that it would soon take its rightful place as a just expedient in the lying-in chamber."

A good service, too, has been rendered by inserting, in a foot-note, the unabridged history of the celebrated case of Elizabeth Sherwood, *in ipsissimus verbis* of Dr. Wm. Osborn, in whose practice the case occurred.

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* See "*Force Measurer.*" Kriddler's Improved Obstetric Forceps, by Dr. L. Elsberg, MONTHLY, October, 1861.

The author recognizes the contagiousness of puerperal fever, which, he believes, "is rightfully classed among the zymotic diseases, or those whose existence depends on the presence of a noxious animal material." Its treatment he divides into prophylactic and remedial; the former consisting in attention to the laws of hygiene, the latter in meeting the indications, whether for depletion or stimulation, as they arise, there being "no specific for this disease." Opium is favorably spoken of—veratrum viride cautiously; to relieve the tympanitis, turpentine is recommended.

Puerperal mania, it is observed, "is most commonly a disease of exhaustion and irritation," and the object of treatment should be "to repair, as promptly as may be, the waste the system has undergone; and, secondly, to allay the nervous irritability." After proper evacuation of the bowels, and attention to digestion and nutrition generally, opiates are recommended.

The closing chapter—on anæsthesia—is a brief, but admirable one. The author having "abandoned the use of chloroform," exclusively employs sulphuric ether, which he has "always found safe and reliable." To this we have no objection, although we frequently employ chloroform, because so much more convenient. To use anæsthetics in every ordinary, natural labor, he regards "abusing a good thing," which is exactly our opinion, too, and we heartily agree with him that "the employment of these agents will be proper in cases of operative midwifery, whether instrumental or manual; in cases of unusual pain accompanying the labor; in instances of rigidity or an unyielding condition of the mouth of the womb, vagina, or perineum; in a woman of excessive nervous irritability; in certain cases of irregular contraction of the uterus, in which the strength of the mother is severely tested without a corresponding progress in the delivery; in many cases of puerperal convulsions, provided there is no tendency to cerebral congestion; in spasmodic contraction of the uterus before the birth of the child, and subsequently to the birth, the placenta being retained by the spasm of the organ."

We have finished our survey. We have read the book, from the first page to the last, with pleasure and profit. The few points to which we have found it necessary to take exception are mostly of trifling importance; still, we should be pleased if, in case these remarks come under the author's notice, he would take them into consideration in the preparation of another edition, which we feel sure the profession will soon call for.

In conclusion, we may state the result of our review of the work, as to both its adaptability as the American student's text-book *par excellence*, and its beneficial influence on the profession at large. In relation to the former, we have noted, 1, Its practical nature: thoroughly imbuing the student with all the practical details, and preparing him in the amplest manner for every emergency which may arise in the lying-in room; 2, Its attractive and impressive form: by presenting, in the natural, eloquent style of a living teacher, graphic pictures of the scenes and difficulties that he has actually encountered, and of the failures as well as triumphs that have followed his endeavors, furnishing the nearest possible approach to personal experience; 3, Its scientific character: systematically arranged, facts and principles collected from every source, bringing it, in every respect, up to the existing state, at this very day, of the medical sciences and obstetric art; 4, Its national value: embodying, as it does, more and better than previous books, the experience and practice of American practitioners, NORTH AND SOUTH. Truly, it is an honor to our country; whether as a representative of American literature and exponent of American educational talent, or for its intrinsic merits as a practical treatise on obstetrics, we may proudly compare it with any foreign similar publication. It has often been asked, "All things being equal, should not American books be preferred to foreign productions?" If we but insist, in this case, upon American students having the best books obtainable, irrespective of their origin, the volume under consideration must become a text-book in the medical colleges of the United States.

In relation to its influence on the profession, we need only refer to its tendency, by the consistent and successful vindication of conservative midwifery, to give a right direction to thought and action on the subject of undue artificial interference, to inculcate a reverence for the resources of nature, and to put an end to the constant encroachments on the domain of Nature, which have led, in our day, to so much "meddlesome midwifery" and rampant obstetric surgery. Such an influence lives through the vicissitudes of theories and the *éclat* of practice; and verily, the author also may lay claim "to have been a laborer alike in the field of science, and in that of humanity, and to have gleaned flowers whose brightness no scorching breath of envy nor stormy change of doctrine can wither or destroy!"

The illustrations generally carry out the practical ideas of the text, and the whole mechanical getting-up of the volume is unexceptionable.

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Transactions of the Medical Society of the State of New York for the Year 1862. Albany: Charles Van Benthuysen, Printer, 1862. 8vo, pp. 531.

Transactions of the New Hampshire Medical Society. (Seventy-first Anniversary,) held at Concord, June 3 and 4, 1862. Concord, N. H.: Steam Press of McFarland & Jenks. 1862. 8vo, pp. 68.

These two are the only State Society Transactions that have reached us this year. We are not sure how many of the Medical Societies of the loyal States have held their Annual Meetings in spite of the wicked rebellion that is devastating the land. We had expected that from the continued postponement of our National Medical Convention, the proceedings of those State Associations who did meet would be marked with unusual interest, notwithstanding the necessary absence of many of their members and the interference with scientific pursuits generally. So far as the two specimens before us go, our expectations have been more than realized. The Transactions of the New Hampshire Society, though but a short pamphlet, contains several valuable papers, besides a very excellent address by the President of the Society, Dr. E. K. Webster, of Boscawen, on the Grand War for the Suppression of the Rebellion, and particularly on "what we, as a profession, are doing in connection with this War—what we are contributing to the general good, and what benefit we are likely to reap." And the volume issued this year by our own State Association far surpasses in intrinsic value most of its antecedents.

The Presidential Address, delivered by Edward H. Parker, M.D., long the Editor of this journal, and whose style, therefore, is familiar to our readers, is an appropriate discourse on "the essential dignity of the profession of medicine." As we cannot at present discuss the individual papers contained in the volume, nor even enumerate them by title, it would perhaps be unfair to single out any; but we may say that, with but three or four exceptions, they form really important contributions to either the departments of Medical *Casuistique*, Therapeutics, or State Medicine. Some of the most valuable have been reprinted in pamphlet form, and we shall take occasion at a future time to review them before our readers.

Books and Pamphlets Received.

On Military and Camp Hospitals, and the Health of Troops in the Field. By L. Baudens. Translated and Annotated by F. B. Hough, M.D. New York: Baillière Brothers.

Causes and Cure of Diseases of the Feet, with Practical Suggestions as to their Clothing. By C. H. Cleaveland, M.D. Cincinnati: Bradley & Webb.

Variola: its Nature and Treatment. By Andrew Nebinger, M.D. Philadelphia.

Sanitary Commission, No. 46. Preliminary Report on the] Mortality and Sickness of the U. S. Volunteer Forces, 1861–2.

THE AMERICAN

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LECTURES, MONOGRAPHS AND CASES.

The Medical History of a Three Months' Regiment. By BENJAMIN LEE, Surgeon, 22d National Guard, State of New York.

On the 28th day of May last, the dailies having a second time startled the nation with the heavily-leaded announcement, "The Capital in danger," and a call having come for immediate reinforcements from the militia force of the country, we descended from the editorial tripod, buckled on that most absurd of all instruments, neither a lancet nor a weapon of war, but a clumsy cross between the two, a surgeon's sword, and started for the seat of war with the noble regiment of which we were the principal medical officer. We purpose to give our readers a few of the results of three months of medical observation in the field, trusting that they will be not without interest to all, and not without profit to those who purpose to take charge of the health of our rapidly forming regiments.

Arriving at Baltimore, the Regiment unexpectedly found orders awaiting them to remain in that city. Accordingly, we marched at once to the ground assigned us, a high hill on the eastern side of the city, commanding a view of the harbor, and having a southeasterly exposure; and, although we did not arrive until five o'clock, by nightfall had our tents pitched and our guards posted. During the three weeks of our stay in Baltimore, we had a succession of cold northeasterly storms and high winds, which made it very trying to men entirely unaccustomed to such exposure. But the precaution of large watch-fires (the U. S. Quartermaster afforded us a liberal supply of fuel) and a cup of hot coffee to men coming off guard on stormy nights, with a little quinine next morning, warded off any serious consequences; only two cases of bronchitis occurring of sufficient severity to make it necessary to give them a sick-leave.

On our first arrival there was considerable difficulty experienced in obtaining a supply of picks and shovels, and in consequence we went several days without properly constructed sinks, and with a very imperfect system of surface drainage in the camp. The floors of the tents were therefore often damp, when they might have been dry, had proper ditches been dug around them; and the low ground in front of us was rapidly becoming foul and offensive. There is perhaps no point on which the surgeon of a regiment just going into the field, especially if it is likely to be for some time in a stationary camp, as is generally the case with a militia regiment, should be more urgent, than that his men are well supplied with tools for policing purposes. They are really of more essential value to the health of a command than medicine-chest or field-case. The soil on which our camp was pitched was a tough, tenacious clay, resembling, when cut, variegated soap, hardening so rapidly on exposure to the air, that the men amused themselves in carving crosses and other objects out of it, to send home to their friends, and quite impermeable by water. A heavy rain coming on just as our sinks were completed, and before they were roofed over, filled them to the brim, and as there was no way of emptying them, it was impossible to fill them in with fresh earth every day, as should of course always be done, in order to cover the deposit of the previous day. In our immediate neighborhood was a poudrette factory, which, when the wind was from that quarter, was very offensive; but, judging that no place could be found on the outskirts of a large city entirely free from nuisances, I considered it unadvisable to counsel a removal of the camp from a locality which certainly possessed the advantages of an elevated situation, and exposure to a breeze which came with tolerable directness from the sea. Besides, we were living in daily expectation of marching orders to some point nearer the scene of hostilities. These orders came at the end of the third week, the day after we were mustered into the United States service, for a period of three months. Up to this time, neither the insufficiency of our police arrangements, nor the presence of the above-mentioned nuisance, appeared to have exercised any deleterious influence on the health of the men. Indeed, beyond a few cases arising from indiscretion in diet and old disabilities, which should have prevented their possessors from ever venturing upon a campaign, we could hardly be said to have a sick list.

Our new post was Harper's Ferry, Va., a spot so famous in the annals of this struggle, and likely to be for so long a time to come a camping-ground for large numbers of our soldiery, that I may be pardoned for describing its geography and topography as far as they have a hygienic significance. It is situated many hundred feet above the level of the sea, at the confluence of two rapid streams running through mountainous districts, and over rocky beds, which have so swift descent that, but for an occasional dam, their entire course would be one continuous rapid. Uniting their forces at this point, they have, by a gigantic effort, cloven the mountain barrier which formerly opposed their farther progress to the sea, and which still, though it permits their egress, materially interferes with the passage of currents of air towards the interior, and exercises a modifying influence on the climate of the valley which it bounds. These streams I need hardly name—they are already classic—the Potomac and the Shenandoah—and the mountain barrier, the Blue Ridge, which, however, passing over into Maryland, loses its distinctive name, sending off spurs in various directions, and finally disappears among the hills of Pennsylvania. The narrow space of level ground along the edge of both rivers was appropriated by Government for its manufactory of arms, arsenal, &c.—affording an amount of water power rarely concentrated in so small a compass. Right up the steep crag behind this narrow ledge clambered and clung the little village, presenting an Italian picturesqueness, and, we may add, upon closer inspection, a filthiness not less Italian. Reaching the top of the hill, the houses stretched along at wider intervals, surrounded by gardens, over a summit called Camp Hill, down a ravine, and thence for half a mile over a second elevation, constituting the village of Bolivar. About half a mile beyond this village is the high ridge known as Bolivar Heights, which extends across from river to river, thus inclosing an isosceles triangle. The heights on the opposite side of the river, called Loudon, in Virginia, and Maryland, across the Potomac, are very precipitous, and clothed with forests to the summit. The soil is hard, containing much slate and some limestone. The difficulty of digging it, and the depth at which water lies, had led to the use, in great measure, of rain-water cisterns, with which nearly all the houses were supplied, while of wells proper there were comparatively few. The springs were generally scant, and contained a certain impregnation of lime.

Our first encampment here was in a healthy situation, just within Bolivar Heights, forming the advance post of the Division, and our sick list continued small. We were permitted to remain in it, however, but a short time. The departure of Col. Mulligan's Brigade left the intrenchments unmanned, and we were ordered to fall back to take charge of them. Our new ground was one which had been camped on over and over again, and had last been used as a stable by a cavalry regiment. Along the crest of the hill behind the earth-works stood the mansion of the Superintendent of the Armory, and the houses of other Government officials. These, with almost every second house in the two villages, had been deserted by their former occupants, who were employed in the Government works, and whose occupation being gone, had sought work elsewhere—many of them in the Southern army. These deserted houses were at once seized upon by the troops, and had been in the occupancy of one side or the other for a twelve-month. The consequence of this occupation was not only a complete and wanton destruction of everything perishable about them, but a state of most abominable filth, which bore no very flattering testimony to the degree of discipline and police maintained among our volunteer regiments. In fact, the comparative cleanliness of the houses in the place might be rated as follows:

Dwellings occupied by horses—filthy.
" " " contrabands—filthier.
" " " volunteers—filthiest.

This mortifying state of things is due, I am confident, not so much to a disinclination on the part of the privates to obey the laws of decency, but to a failure on the part of superior officers to afford the facilities and enforce the regulations therefor.

A vigorous system of policing was at once set on foot, but it was much embarrassed by the extreme difficulty of obtaining wagons, of which the Quartermaster's department at this post seemed to be almost entirely stripped. And here I must record my protest, in addition to those of others, which have been lately so forcibly and solemnly uttered under the inspiration of the horrors of neglected battle-fields, against the niggardly and inhuman policy which makes the medical department entirely dependent upon the Quartermaster for the transportation of its most essential stores, and the performance of its most imperative duties. One army wagon, at least, not to mention the ambulances, should be under the exclusive control of the surgeon, and he should direct its use when in camp as well as on the march. The bare, ugly truth is simply this: that the officers of the old *régime*, many of whom occupy the highest places in our administrative military bureaus, think less of the life of a volunteer, than of that of a slave or a horse. They are willing to make appropriations for furnishing ammunition and ordnance; but when it comes to spending money in order to alleviate the sufferings or save the life of the sick and wounded, they become suddenly economical, and hesitate to incur the expense. General Halleck himself has, in so many words, declared himself to be utterly opposed to making all this fuss about the wounded. And it is to be feared that even the Medical Staff themselves of the Regular Army may be somewhat tinctured with this ill-disguised contempt for volunteers; which may lead them to neglect to make proper provision for their wants. Volunteer Regiments arrived at Harper's Ferry while we were still there, a thousand and forty strong, and with dozens of sick, who had not received so much as a hospital blanket or an ounce of medicine of any kind. And this with the enemy only a day's march distant!

Another want experienced was that of lime, which was scarce, and of an inferior quality, the inhabitants of the region having altogether suspended their lime-burning operations.

The co-operation of the medical officers of the General Hospital (located in two of the Government buildings) was sought in policing the entire town, the civil authorities having ceased to be, and the usual sanitary precautions having been therefore entirely neglected. But the unhealthful conditions of our new camp soon began to tell, notwithstanding our best efforts. *Diarrhœa*, assuming in many cases a *dysenteric* type, although not generally of a severe grade, attacked the men by dozens, so that in the course of three weeks, or by the middle of July, more than one-tenth of the regiment were on their backs. The remedy found by far the most satisfactory in the treatment of these cases was sulphate of magnesia, in connection with small doses of opium. The difference between the affection here and that which I had met in Baltimore was strikingly apparent. There it was simply an irritable condition of the intestinal mucous membrane, the result of irritating ingesta, or a sudden suspension of the functions of the skin; and a small dose of opium, in some form, at the first, would frequently control the irritation and relieve the difficulty; but here, it was a congested condition, not of the capillaries of the intestinal tube only, but also of the whole portal system, the result of exposure to baleful atmospheric influences of long continuance.

Hence, opium often but increased the pain; while the depleting purgative, on the contrary, exercised a most happy and soothing effect, unloading the gorged vessels, and relieving the tormina and exhausting tenesmus almost immediately upon the first evacuation. Subsequent evacuations, even profuse, seemed to invigorate not to exhaust. The article furnished by Government seemed to me, as indeed were all the medicines with which I was supplied, of unusual purity. Oleum ricini appeared to act much less kindly in these cases.

As the heat of the latter part of July and of August began to make itself felt, (and owing to our southern exposure, and the obstacle which the mountains opposed to the passage of the wind from the sea-board, it was here excessively intense,) the *liver* began to confess its influence, as attested by the clay-colored deposits which so largely composed the contents of the sinks, by a persistent diarrhœa, or an equally persistent constipation, and in many cases, by a remarkable depression of the vital forces, without febrile action, which resisted all the combined powers of quinine and stimulants. Nothing but a removal to a northern climate sufficed, in some cases, to bring up the tone of the system to anything like a working standard. Hydrargyrum cum cretâ appeared to be the most efficient agent in stimulating the organ, and at the same time checking the diarrhœa, which, to a greater or less extent, usually accompanied this condition.

A little later, passive congestion of the mucous membrane of the *bronchi* showed itself as a consequence of this continued interference with the portal circulation and hepatic elimination, and we had the singular phenomenon presented of an epidemic of *bronchitis sine inflammatione*, during a period of intense heat, while the nights were scarcely less hot and dry than the days. As might have been supposed from its *rationale*, the remedy for this condition was to be found, not in the list of expectorants or bronchial evacuants, but of the mercurials, and cholagogues. Taken in its incipiency, a single dose of blue mass rarely failed to relieve it; but when neglected, it became in some instances very obstinate.

The final manifestation of the hepatic derangement was *jaundice*, following intense cephalalgia and enteralgia—the latter of such severity as to simulate peritonitis.

Apart from the adverse adventitious influences adverted to, the natural advantages of our situation were great. The camp was pitched upon a steep hill-side, some two hundred feet above the rocky bed of the Shenandoah; and the soil being, as before remarked, of a hard, slaty nature, the surface drainage was perfect. In such a locality one could hardly dream of *malaria;* and yet as soon as, by the middle of August, the nights began to grow damp and chilly, and sunrise saw the mist-wreaths driving up through the gap and curling along the sides of the mountains, this baleful agency began to make its existence but too obvious. It was manifested not by regular attacks of chill and fever, but rather under the masked form of the disease—an unaccountable lassitude and sense of discomfort—a feeling of dullness and vertigo—persistent headache—rarely rigors—not unfrequently fever without the chill—and, in two singular cases, a well-marked *Torticollis Intermittens.*

One single case of typhoid occurred, which terminated favorably.

The use of an unaccustomed water, containing an appreciable amount of lime, undoubtedly aggravated the intestinal fluxes, as well as gave rise to an immense deal of *colic.* Nothing appeared to act so well in this last annoying disorder as capsicum, combined with camphor; opium being in great measure contra-indicated, by the tendency to hepatic congestion. I am satisfied that the value of capsicum as a stimulus is not properly appreciated. Administered in combination with quinine, I found it to increase the activity of the latter materially.

The almost entire absence of fresh vegetables was another cause of intestinal irritation. The people of the neighborhood, under constant apprehension of active hostilities, had not the heart to cultivate their gardens, and the consequence was, that for a long series of weeks the men had nothing but meat and hard biscuit to eat. It would have been a very trifling matter for Government to have sent up a supply of vegetables from Baltimore, which would have been eagerly bought by the soldiers for all they cost. The necessity for variety in the diet table, especially in summer, does not seem to be understood by the authorities. As Professor Ordronaux well observes in his little work on the "Preservation of Health in Armies,"—"Soldiers cannot be fed like steam-engines, by just so many pounds of this or that kind of fuel, daily and unvaryingly administered. A man losing two or three pounds in weight by perspiration to-day, could not be restored to-night by simply gorging him with a like weight of beef, pork, or bread. In the presence of vital forces, the conduct of organic functions cannot be regulated by chemical formulæ born of the laboratory. No narrow methodism is tolerable here. We must follow experience alone; and experience everywhere shows that, in the healthy, health is best preserved by a *liberal, mixed diet.* If we would preserve the health of our troops, we must amplify the range of their dietary. It may cost a little more, and but a little more, yet that little is a hundred per cent. less than the cost of nursing a sick man, paying him wages besides, and over all losing the benefit of his presence on the battle-field." Of the quality of the rations furnished, certainly no complaint could be made. Everything was good and in good order. The want referred to was in some measure met by the large supplies of blackberries brought in by the country-women, of which the men were encouraged to eat freely.

The *remittent fever* which prevailed to a slight extent was of a mild form, rarely lasting longer than a week, but often leaving the patient prostrated for a much greater length of time. Heroic doses of the mild chloride and quinine were the most effective treatment.

Vitiated secretions and an impoverishment of the blood were still farther indicated by *ulcerative stomatitis* and *furuncular eruptions.* The superficial abscesses about the ends of the fingers and nails, which presented themselves in considerable numbers earlier in the campaign, I was disposed to regard as rather the result of local violence to hands unaccustomed to hard labor. The great prevalence of *urticaria* during the earlier part of August was probably due to the wearing of heavy flannel underclothing during the intense heats which then prevailed.

Within a quarter of a mile of our own ground was encamped another New York Militia Regiment. It was therefore subjected to precisely the same climacteric influences as ourselves. Yet its sick list, while it presented the same variations with ours, was never as large by one-fourth. It may not be unprofitable to notice the differing conditions which produced the unfavorable preponderance on our side. It may fairly be attributed—

First, To the classes of men composing the two regiments; the Twelfth being composed of the ordinary material of volunteer regiments, while the Twenty-second was formed of merchants, professional men, students, and clerks, a class wholly unused to the labor and privation which they here encountered. The deduction is a patent one: —that regiments, composed like the latter, while invaluable for sudden emergencies, from the high degree of discipline and drill which they constantly maintain, and the promptitude with which they are able to obey a call, are only wasted when called upon to undergo the fatigue and exposure of a long campaign.

Second, To the fact that the Twelfth occupied Sibley tents, while our own men were supplied almost entirely with wedge tents. The former could with the greatest ease be furled daily, and thus the most perfect ventilation of the tent and drying of the ground secured, while the latter must be entirely struck in order to secure this result;

and this could not be accomplished oftener than twice a week; not always as often. In my opinion, no wedge tent should be made without a square window in the back, near the ridge-pole, and a flap to act as an awning in case of rain, but so arranged that it cannot possibly close the opening. The deficient ventilation of tents is a monstrous evil, demanding immediate and careful attention. Nor can it be considered allowable, in a sanitary point of view, to place six men in one of these common tents, as is now the regulation. The atmosphere of a tent thus occupied becomes by morning perfectly stifling and pestilential. Typhoid is its natural child.

Third, To the saturation of the soil on which we were encamped with the emanations, excretions, and offal of regiments which had preceded us. No regiment should be compelled to pitch its tents upon the precise site of a former, unless for unavoidable strategic reasons; and when this becomes necessary, the first care of the commandant of the post should be to see that every facility is afforded for a thorough police; while all houses in the vicinity should be kept most scrupulously clean, frequent inspections being made to assure it.

There is good reason for supposing that the body-belt now worn by many of the militia and Zouave regiments, in contradistinction to the old cross-belt, exercises a very injurious tendency. The weight of from forty to eighty rounds of ammunition, in addition to a heavy side-arm, supported entirely upon the hips, is, we are confident, most pernicious. As our regiment made no long marches, I could trace no cases of hernia to this agency; but there was a constant complaint of pain and weakness in the back and loins, with evidence, in some cases, of renal congestion, and of pain and tenderness in the bowels. In not a few instances I was obliged to keep men on the sick list who were otherwise fit for duty, simply to avoid an amount of pressure upon intestines already irritated and enfeebled, which I feared might provoke serious inflammation.

But one death occurred during the entire term of service—that of our Colonel, James Monroe; a man of great military capacity, remarkable versatility of genius, scholarly attainment, and courteous demeanor, and possessed in an unusual degree of the power of commanding the confidence and affection of those about him.

His case was so obscure and unusual as to merit especial notice. While the Regiment was still in Baltimore, he was seized with symptoms new and alarming to me, which Dr. Mackenzie, an experienced practitioner of that city, denominated a congestive chill. This left him much prostrated. Fearful of a recurrence on exposure to the sun's rays while in this enfeebled condition, he remained in Baltimore for a period of fifteen days after the departure of the Regiment for Harper's Ferry. Anxiety for the welfare of his command led him to follow it while still much debilitated. For the first fortnight he did not seem to lose in strength, although his nervous system was in a most irritable and unsatisfactory condition. At the end of this time he was attacked with mild febrile symptoms, which gradually abated under the free use of quinine, until the afternoon of July 29th, when, after a natural though somewhat profuse evacuation, he was seized with the most excruciating pain in the hypogastric and anal regions; so severe, indeed, as to cause a brief syncope.

Opium was administered in full doses, both by the mouth and the rectum, with the effect of moderating the pain, but without reducing the frequency of the pulse, which was weak and thready, numbering about 120. During the next day his condition was not materially altered. Ten grains of the mild chloride, followed later in the day by sulphate of magnesia, with capsicum, failed to move the bowels. The pain was severe at intervals, accompanied with some tenderness on pressure. There was nothing as yet, however, to make his physicians suspect anything more serious than a severe bilious colic. Towards midnight of the 30th the pains in the inferior abdominal region ceased entirely; vomiting of bilious matter supervened, with hiccough and eructation. The pulse rose in frequency and lost in force. The skin became cold, and bathed in clammy perspiration. The whole condition, in short, indicated a fatal collapse. Carbonate of ammonia and whiskey, administered in very large doses, both by the mouth and by enema, artificial heat and stimulating frictions, failed to arouse the faintest reaction. The jactitation, which from the first had been a prominent symptom, became more and more distressing, the pulse faded away, the brilliant mind at last lost its vigor, and he finally succumbed at 6 A. M. of July 31st.

The short duration of the attack—only thirty-six hours—the agonizing nature of the pain, the great prostration, the intense nervous anxiety, the anxious and despondent expression of the face, the peculiar tone of the cries uttered, (being more like those of a wild animal than articulate sounds,) and the suddenness both of onset and of deliquium,—all appeared to the surgeons who watched the case to point to a lesion of the peritoneum—and that lesion probably perforation of the intestine. As an autopsy could not be had, however, the diagnosis must remain conjectural.

Thus perished, on the soil that gave him birth, not the least noble of the many heroic men whose lives have been offered up on the altar of patriotic devotion, victims to the hellish demon of Rebellion.

Urine Injections—A New Remedy. By C. A. Hartmann, M.D., Cleveland, Ohio.

In the course of his "Lectures on New Remedies and their Therapeutical Application," published in the *American Medical Times*, Prof. S. R. Percy, of New York, gives two cases of stone in the bladder, in both of which he injected his own urine three times daily into the bladder of the patient, continuing the practice, in one instance, for seven, and in the other for nine weeks, and, as he declares, with the most happy result, for the doctor's urine dissolved the patient's calculus, and a complete cure in either case was the consequence. The professor feels, evidently, rather proud of his discovery, and pronounces his urine emphatically a new remedy. That is, however, a mistake. New is only the taking of the doctor's own urine, and the caution to those inclined to follow this dirty practice to keep their water clean of alcohol and tobacco! In the last century, Dr. Sachs von Loewenheim testifies that it was a particular secret of Dr. Pansa to break up urinary calculi by means of crabs' eyes dissolved in "spiritus urinæ," (a preparation from human urine,) which solution he injected into the bladder with the aid of a peculiar instrument. Instead of merely improving upon such an antiquated and deservedly forgotten practice, it is certainly more congenial to the progress of the times to examine carefully what the really efficient ingredient or constituent was in those old compounds, and human as well as animal matters in vogue with our forefathers. Many of these disgusting things had their value, although the virtues of a great number were only imaginary. It looks as if some of them had been too hastily discarded, and since pepsine, urea, and similar preparations have been admitted into the materia medica, being only new forms of old remedies of the class referred to; since even the celebrated "Album Græcum" has had its resurrection in Churchill's hypophosphites, we are at a loss to find fault with Percy's proceeding, considered as an experiment. To recommend its introduction into general practice is more than ridiculous, it is an absurdity. Admitting that the statement, as published, be true, that healthy urine, injected into a bladder containing a calculus, possesses the power of dissolving the concretion and remove the disease, under certain conditions, then we have only to find by chemical analysis and further experiment, what element of healthy urine possesses that valuable power, and it will naturally follow that we employ that element, in such a manner as its character will dictate, instead of the changeable and too readily polluted refuse fluid from our body. In order to facilitate the researches in that direction, the recommendations of older writers may find here a place, for their manifold methods of employing animal urine against calculous affections may furnish some useful hints as to what direction it might be best to follow for the discovery of a really new and useful remedy.

The urine of many animals, but especially that of men, oxen, and he-goats, was in great repute among the old physicians as a remedy for the stone. Dr. Crato von Krafftheim, physician to one of the German emperors, wrote as follows: "The water distilled from human or bovine urine, if not distasteful to the patient, is a good but mild diuretic for calculous troubles." Claudius, Deodatus, and Weickard corroborated this. Petrus Johannes Faber pronounced the tincture of human urine a sublime secret for the cure of stone. He distilled the urine over a very slow fire, poured upon the residuum rectified spirit of urine, and obtained a tincture which had to be rectified repeatedly to destroy its disagreeable odor. It was taken in scruple doses, mixed with an appropriate water. The same author stated that the urine found in the bladder of a newly-born he-goat or calf, drunk immediately, was the very best remedy for the purpose of destroying stones in all parts of the body. Rudolfus Gocklenius, professor at Marburg, took the concretion accumulating on the bottom and sides of night-utensils, dried and powdered it, then mixed it with brandy, and allowed it to settle in a warm place. Of this mixture he gave a spoonful morning and night. Schroeder extolled the volatile spirit and the volatile salt of human urine as excellent lithontriptics. Three or four grains of the salt were taken with parsley-water or chicken broth. Rolfinck mentioned the same spirit on account of its aperient and diuretic power, taught the best method of preparation, and added, it might be taken in beef-soup, prepared with parsley or parsnip, or in French or Rhenish wine. A man by the name of Conrad Hoster, finding he could not pass his urine, took three spoonfuls of his boy's urine in a glass of Rhenish wine, and soon experienced relief. Arnold Wendel took for diabetes seven or eight drops of the spiritus urinæ, mixed with beef-broth. Untzer was told by an experienced chemist that either the rectified spirit of urine, or the volatile salt, or the magisterium of the same, or the oleum luti, given in some aromatic water, would give speedy relief in renal calculi, provided the patient could bear the nasty smell, for they would not only keep in order the passage of the urine, but expel also gravel and stones. Dr. Wedel thought much of the urine spirit. The essence of human urine was believed to destroy calculi in the kidneys as well as in the bladder. Dr. Salamo Albert recommended two lavements made with urine. The one, at the same time, expelling the water from the abdomen, was prepared in this manner: boil an ounce and a half of good sour dough, with a little salt and water, enough to make the whole eight ounces; filter, and add of urine of a pure boy, four ounces; clarified honey, one ounce; oil of rue, three ounces; mix. The other clyster served to keep the bowels open, and to regulate the urine. A handful of toad-flax was boiled in a pound of beef-broth, an ounce and a half of boy's urine, half an ounce of the oil of rue, and two drachms of the electuar. hier. nicol. added, and the whole mass mixed together. For an external application, spirit of urine was mixed with oil of urine, and some aromatic oil to conceal the smell, and used warm as an embrocation. And, remarks another old author, all remedies prepared from urine exhibit their diuretic and lithontriptic effects by the virtue of the volatile salt they frequently contain.

Burckard Waldbuerger, as soon as he felt trouble in his kidneys, drank his own urine, or that of a she-ass. Judit Loewffeltantzin took, also, for the same trouble, her own urine, adding to each mouthful ten drops of the distilled oil of chamomile. Barbara Guentherin, having no he-goat, used her she-goat's urine. The salt of the stag's urine, taken in scruple doses, was not less esteemed as a good diuretic. A sow's urine was thought particularly efficient. Schott pronounced the wild boar's urine still more powerful, and sometimes ordered this animal's bladder to be eaten, particularly smoked. Of bovine urine, Helmont narrates that a girl had frequently passed blood instead of urine. He therefore ordered the bladder of a newly-born male calf, and of the fluid contained therein, (resembling urine to some degree, but not entirely like it;) the girl had to take two ounces every morning, mixed with some white wine. She was soon fresh and healthy again, and remained free from calculi. A trial of the same kind with the bladder of a newly-born he-goat turned out still more favorably. The same statement about the fluid in the bladder of a bull has been repeated by Grembs, and Schroeder has maintained that a he-goat's urine, drank immediately after being passed by the animal, was the most praiseworthy of all urines, on account of its great power to expel the stone and increase the urine.

Against vesical calculi, a water distilled from human excrements had also its admirers. The famous all-flower water, prepared from cow-dung, was prescribed for the cure of renal calculi. So was the dung of nearly all the ruminating animals; of mice, pigeons, chickens, geese, swallows, etc. It would be too tedious to give all the particulars about these singular medicines. What has been stated may suffice to give an idea of the extensive exhibition of urine and its preparations in calculous diseases, practiced up to the last century. For the sake of humanity do we hope that the age which can permit such medication has passed forever.

Yálpánaranavaithiyam; or, Jaffna Native Surgery. By Dr. Geo. M. Reid.

[For the following Gleanings of Tamil Surgery* I am indebted to Dr. J. W. Richards. Dr. Samuel F. Green, of this city, a missionary of the "American Board of Commissioners for Foreign Missions," kindly brought the manuscript with him when on a visit here, some years ago, to some extent revised it, and placed it in the hands of Dr. Richards for publication. I have endeavored to reproduce the original, and added explanatory notes as far as it was in my power. All my endeavors to find some one conversant with the language and the subject were unavailing, and in one or two instances a hiatus occurs from my inability to decipher the original. I should have presented as a matter of interest the Jaffna words, also in Jaffna characters, (with which the manuscript before me is richly illustrated,) were it possible to obtain the requisite type. Elsberg.]

How to drive off the Devil, called Sangáviyam.—*Sangáviyam* causes the insensibility after falling from a height. He pushes the sufferer off trees, and also into wells and the like. It is the custom after such occurrences have taken place to call to the sufferer's aid one skilled in the art, to expel Sangáviyam by the use of *mandras* or charms, and the margoza tuft,† and to make an offering to the nearest Temple. A devil sent by a wizard may also cause one to fall. Whatever devil may have been the cause, the senselessness must be treated by a Mandra-man—who must be a Sivite priest, of advanced age, and with good teeth.

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* The Tamil language is spoken at the southern extremity of India, and on the Island of Jaffna, immediately off the coast.—[Ed.]

† Margoza leaves grow in tufts, and are extensively used in superstitious ceremonies. In cholera times, they are worn in the clothes, hung over the door, &c., to keep off the cholera devil.

Boils—Abscess.—As soon as a boil appears, it should in the morning watch be wetted with spittle and rubbed. If in spite of this the boil increases, mango leaves should be heated, mixed with margoza oil and rubbed on. This is called *santhappánam.* Should this fail, apply the milky juice of the oleander. Should pus gather, boil *kuruvicchai*[*] flowers in water, and bind them on, or apply a poultice of curds and rice well mixed. After the boil has opened, apply *karanaipávattai* or tobacco leaves. If very painful, soothe it by *mandras,* (charms.)

Sores—Ulcers.—To these apply an ointment of cocoanut oil and beeswax mixed—if this succeed well—otherwise add to it resin, blue stone, white vitriol, &c. For fistulous sores, *nacchu*[†] oil is an approved remedy. For mere scratches of the skin, smear on cocoanut oil.

Sprain.—When a sprain happens, rub the part immediately with sesamum oil, and have it stroked by the foot of one footling born. Should this fail, apply turmeric[‡] oil, and call the charmer to use mandras. The mandra for this is, *Om tér urulatthirumudi urulatthirucchadai urula ammi urula A kásamurula aiyanár sír pátha murula urundu pirandu O di vara vé sivá ká.* Write this mandra, and tie it on the strained member, and hope for a cure.

Local Pain.—Try for some time the effect of drinking arrack, smearing the part with oil, and sprinkling upon it turmeric powder. Should this fail, make rice mush, mingling in some cocoanut oil. Take ripe cocoanut meat grated, spread it on a cloth—upon this spread the mush hot, and apply at once to the part. After this is cold, let the patient eat the mush. After this, heat cocoanut, squeeze out and drink its juice mixed with sesamum oil. If this fail, apply a plaster.[§]

To raise a Blister.—Grind the root of the plumbago zeylanica, and apply it to the affected part; also the milky juice of the euphorbium, or the leaf of the castor plant wilted and tied on, or the milky juice of the *tillai,* soaked in a cloth and applied to the part; any one of these will blister. After the blister has risen, rub cocoanut oil on the part.

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[*] A parasitic creeper, the leaves and flowers of which are mucilaginous.

[†] Nacchu oil means literally poison oil; it is made by simmering several mineral and vegetable astringents together with spices in sesamum oil.

[‡] An oil made by simmering divers roots and drugs in one part each of sesamum, castor, and cocoanut oil, and three parts of turmeric juice.

[§] Called a *Pattu,* made frequently by mixing in with quicklime, honey, eggs, &c., and spreading the paste on a cloth.

Wounds.—If there be much bleeding, stop it by placing on the wound fresh leaves or *olais*, and saying: *Om Indra tangai mandra kanni iruppukkurang kundu tannírkkup pó rál tannir venniráka nitkavé siváká;* afterwards tie on the *otheyam* bark (bark of the odina pinnata), frequently wetting it with water. To slight wounds, red pepper may be applied. If the wound becomes painful, heat powdered ginger, black pepper, and turmeric, and bind on. For gaping wounds, stitch with cocoanut husk fibre.

Fractures.—A fracture may be detected on crepitation, and the fractured ends may be felt by the touch. If the arm bone be broken, stroke and pull it straight; apply four splints of proper length; then let sesamum oil continually drip upon the part. If a leg bone be broken, lay the person on the back, stretch and straighten the limb, and keep it in place by tieing it on to pegs driven in the ground on each side of the limb; then tie on splints, and let drip upon the part sesamum oil. A diet of rice mixed with sesamum oil will cause the fracture speedily to unite. After the bone is united, cast away the splints and apply a casing made up of eggs, honey, euphorbium milk, *chunam*, &c. If a large callus appear at the point of union, use pressure upon it by splints. When a vertebra or rib is broken, it is to be cured by applying only the casing of chunam plaster. If the skull be fractured, leave it to heal spontaneously, only feeding the patient generously. In fractures of fingers or toes, apply slender splints or the chunam casing. After a casing is removed, cure the lameness by turmeric oil. If there be a wound with the fracture, stitch it, and apply splints to the fracture.

Dislocations.—A dislocation may be recognized by comparing the sound with the injured limb and by the change in motion. If the shoulder-joint be thrown out, bring the bone right, and apply a "casing," [starch-bandage-like.] Also the same for the elbow. If the wrist be put out, make the patient stand on a mortar, grasping hold of a bar above; then knock the mortar from under him. Dislocation of the wrist may also be reduced by walking about with a heavy stone tied to the hand by a rope. In dislocation of the hip, relax the part for two or three days by the application of sesamum oil; then work the bone into place; after which, put on a casing. If, after the casing has fallen off, there be lameness, apply some medicated oil. Dislocation of the knee is to be immediately reduced by traction and a "casing" applied at once.

Slivers, Bones, &c.—Slivers, &c., should be at once removed; then a lump of salt should be tied on the wounded part and heated by a fire-brand. If pus gather, remove the foreign substance, and to the wound apply euphorbia juice. This is proved good by experience.

Snake Bites.—Immediately after a snake has bitten one, paint a circle of chunam around the wound, and slap the part by a tuft of margoza leaves, in order to prevent the poison spreading in the system. Keep the patient from falling asleep. Apply to the wound the *Geruda* stone, which, if the wound be really a poison bite, will not immediately fall off. When, after having absorbed the poison, the stone falls off, it is put into cow's milk, and in this it will throw out all the poison. If this does not cure, then give some rhinoceros horn rubbed on a stone wetted with breast milk. This remedy is very extensively used, and in a great variety of ailments.

Dog Bites.—Immediately after a dog has bitten one, the bite should be slapped by an old shoe; afterwards burn shoe leather and tie it upon the wound; together with this, mandras should be used. If this does not cure the bite, apply muruñgai * leaves, ginger, and black pepper ground together; otherwise the patient may be carried to the Mandra-man, who asks him in how many days the bite will heal; hearing his answer, he makes a cut in the muruñgai tree, which cut, and the bite, will heal up together, according to the patient's expressed date.

Syphilis.—For this or for pox-sore give mercury powder to salivate, and then draw out the humors. Also locally, dolíchos gladiatus oil, &c. By the use of China-root powder, internally, even though the patient be not salivated, some cases of syphilis are cured. During salivation, let the patient abide in a closet, eat milk, &c., eating no salt nor tamarind, nor chillies;† observe a strict diet. If the patient "break his diet," the disease [remedy ?] will appear in the hands and feet.

Bubo—Fistula.—The swelling which arises by contagion is called bubo. Heat a brick and rub it on the swelling, pronouncing mandras. Wilt a plantain leaf and tie upon it. Should worms breed in the swelling, treat this the same as any other wormy sore. If the bubo become fistulous, apply Nacchennai.

If a fistula appears in the cheek, it is called "cheek piercer;" if near the anus, "side *Pavantharam.*" To these we should apply either the caustic tent or the Nacchennai.

Burns.—Apply immediately either honey, or salt water, or rain water. If a raw sore, apply either fine dust or Margoza powder. If this does not cure, then apply by a feather cocoanut oil, in which horse-dung has been boiled.

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* The Hyperanthera Moringa. † Red peppers.

‡ Nacchu oil, or Nacchennai, is the "poison" oil before spoken of. See note, p. 255.

Burn by Gunpowder.—Boil peacock feathers and peacock fat in cocoanut oil, and apply this oil; if not cured by this, treat as a common burn.

Tooth Worm.—Pluck a vattukkai, grind it in Margoza oil, ball it, and place it on a heated iron grass-cutter, and cover with half a cocoanut shell, having a hole at its apex. Suck in the smoke which rises up through this hole, and spit in water, and the worm will be seen to float. This is quite a proved remedy. If a babe bite a brinjal, its teeth will decay.

Gum Boil.—Heat a Kilavai stick in the ashes, and touch the boil morning and evening by it. For toothache, boil ebony saw-dust, and gargle with the water.

Elongated Uvula.—Elongation of the uvula will produce cough and tickling in the throat. As soon as discovered, go, without speaking, and pluck bryonia leaves, and squeeze the juice upon the crown of the head. If this does not succeed, pull the three hairs exactly in the middle of the crown; if this fail, take araippu, (the pumice of Iluppai seeds,) alum, black pepper, salt, turmeric powder, and mix them, place them upon the leaf-stalk of the plantain or veruku plant, and press them upwards on the uvula. A severe case will resist even this; if so, touch the uvula by a heated gold wire, or by a hot turmeric root. Apply on the proper nerve in the ear the kodi véli,* to make a sore, and draw off the humor from the uvula. Sometimes it is advantageous to boil *kurukkan vittu;*† dry it, and swallow the lumps dry.

Fish Bone.—If one is choked by a fish bone, reverse the ends of a brand lying on the hearth. Strain down a morsel of boiled rice, and push the bone along. Stroke the neck with the beak of the spoonbill, saying this mandra: *Umai yé padukira pát taip páráy námung kandóm mullu vilunthathu kokupparanthathu kalli mullé kánchuramullé vellimullé pámpusuttiya palli vayira mullum muri muri yisupariyammai yánai.*

Sore Eyes.—Symptoms of sore eyes are enlarged blood-vessels in the conjunctiva—shrinking from light, burning, &c. In such a case, go silently and pluck Kovvai ‡ leaves or Mosumosukkai § leaves, and squeeze the juice into the eye. Powdered rock candy and alum, mixed, and blown into the eye through a quill, is also recommended for red streak in the eye, (gorged conjunctival vessel.) In excessive redness of the eye, add fresh butter to hot boiled rice; put some of this in the eye, and apply the rest externally to the eye. Immediately when the attack of sore eye comes on, catch urine, and wash the eye therewith. This is a proved remedy. When there is chronic disease of the lids, ("*Pulumécchal,*") burn alum on a heated iron, add lime-juice and pulverize well with a Kadukkáy.* For opacity of the cornea or spot in the eye, employ the alum pill (alum matthirai) or the pithurókini matthirai. Píthurókmatthirai, or the píthurókini pill, is made as follows: Take Inthupper (nitrate of soda) Piper-longum and Píthurókini (yellow [?] hellebore,) of each, equal parts; grind them together in the juice of Nanthiyávattai,† and make into pills.

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* The plumbago zeylanica, most likely the root already spoken of for raising a blister.

† A small cereal. ‡ Bryonia. § Bryonia scabra

For Cataract in Eye.—Apply the *Naiyanavithiyennai,*‡ and bathe daily. It is best to introduce a needle and disperse the opacity. If, consequent on this, the eye inflame, cauterize over the brow by a hot iron. If agony be experienced in the eye, open the frontal vein and bleed freely.

Scrotal Swelling, (called Andaváyu.)—If this swelling retract the testis within the belly, the disease called *Kalilèruváthám* will develop. The symptoms of Andaváyu are swelling, acute pains, tenderness, soreness of body, dragging pain of testis. The treatment for this is, wrapping the part in a wet cloth and heating it by the handle of a ladle. Boluses of the size of an aruka-nut, made of nutmeg, *tumpailai,* and garlic ground together, may be taken internally. This will cure the disease; also select the spot on the lobe of the ear where the proper nerve passes, and punch a hole there.

Múlam.§—Múlam is of three kinds, viz.: Internal, external, and protuberant. In prolapse of anus, apply to the part the pulpy surface of an aloe-leaf, softened and split, and the prolapse will disappear. In internal piles, there will be discharges from the bowels; for this eat a mush of dalbergia shoots and rice flour, mixed, dipped in sesamum oil at the time of eating. Be careful with your diet; mix with it flowers of the hyperanthera moringa, fry and eat.

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* Terminalia chebula, an astringent nut. † Nerium Coronarium.

‡ Naiyanavithiyennai means literally eye-rule-oil; it is a medicated oil which is rubbed upon the head, allowed to remain for a while, and then removed by a peculiar process of bathing.

§ Múlam means anus; it means also, root, origin, and seems the exact equivalent of the word fundament. In this connection it doubtless refers to piles, etc.

E.

Múlakkiranthi is a sort of whitish spotting over the surface of the body. For this, eat roasted blood of the turtle; or if this fail, eat hog's lard.

External múlam may be scattered by applying the following mixture: ℞.—*Iluppai* seed pumice, *cumin*, black *cumin*, white garlic, blue vitriol, and cardamom; grind all these together abundantly. This will cause the swelling to "dissolve" and fall. To cause the swelling to disappear, powder black sesamum seed, mix it with sesamum oil, and add a little "*Jaggery*." Heat a brick well in the fire, and put it into a mortar; then put on this the above mixture, and let the patient sit over the fumes, kept in by cloth wrapped round. The múlam [piles ?] will disappear, [literally translated, "be severed and fall."] To remove piles, operate.*

Súlai.—Súlai is of eighteen different kinds—viz.: *Mékasúlai, Surasúlai, Vedisúlai, Bellysúlai, Headsúlai, Nithampasúlai, Tonthasúlai, Kannasúlai, Mouthsúlai, Sidesúlai, Kneesúlai, Kundusúlai, Mutsúlai, Handsúlai, Nírsúlai, Necksúlai, Urasúlai, Sarvángasúlai.* For all these, a valuable remedy is the following: Take China-root, 5 palams;† kurásáni, Athividaiyam, [a root,] O'mam, Sáthipatthiri, nutmeg, cloves, dry ginger, long pepper, black pepper, of each $\frac{1}{4}$ palam. Powder separately, sift, put in a pot, and add a quart each of cow's milk and "*ghi;*" boil at a moderate heat for a Nálikai,‡ constantly stirring it to keep it from burning to the bottom. When it becomes thick, sprinkle in 6 palams of sugar; then stirring well, put all in a new vessel. After three days, begin to take of this medicine as much as the bulk of a Tánrikkáy,§ with a Kalanchu‖ of sugar, for a term of forty days.

Onychia.—This is a swelling about the nail, accompanied by great pain. It may arise from the piercing of a splinter or thorn, or may appear spontaneously. For this take Kumilam, (stew it moderately,) and cover the swelling with it. Or take the flesh of a shrimp and bind on. If by these means uncured, then take an aloe-leaf, heat it, take out its pulp and bind on.

Incurable Diseases.—The following diseases are incurable: Cheek-piercer, (a cancerous ulcer;) Tonguearanai; Toothsúlai; Nervesúlai; Back carbuncle; Diabetes; Scrotal enlargements; Mouthputthu;

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* There is here in the manuscript before me a hiatus, which I cannot fill.

† A *palam* is about $1\frac{1}{4}$ ozs. avoirdupois.

‡ A *nálikai* is 24 minutes.

§ Tánrikkáy is Terminolia Belirica fruit.

‖ A Kalanchu is as much as $\frac{1}{6}$ of an ounce.

Kandamalai, [literally: Necklace, probably inveterate cutaneous disease encircling the neck;] Throat*karappan; Mukasingi*, [literally: Face-lioness; perhaps Lupus;] *Padarthámarai*, [literally, spreading Lotus;] Vagina*súlai; Molukupanaiyam;* Allupanaiyan.

Diseases caused by witchcraft are also incurable. Furthermore, according to some, the following, viz.: Ulcer; *Vedisúlai; Mandaisúlai;* Poisonous humors; Leanness; Habitual heat; Stoppage of nose; Diseased teeth; *Sathaiyadaippu;* Ulcerated ear, and Seminal weakness, are incurable.

Bodily Parts.—These are head, face, eye, nose, mouth, ear, neck, chest, hand, shoulder-joint, back, belly, loins, buttock, thigh, leg, male organ, female organ, fingers, toes, &c. The bones in a man number 4,448; and the diseases number as many as there are bones. The head is divided into vertex, occiput, forehead, ocular region, and temple. The face, into eye, nose, upper jaw, lower jaw, *mukarai*, [*i. e.*, glabella or interocular space,] chin, and ear. The prominence in the front of the neck is called "the Knot." [It is supposed that certain nerves are here knotted together.]

The Viscera.—A tube leading from the mouth joins it with the stomach. There are the organs, "mango," "Lotus fruit," [literally so called,] great liver, small liver, stomach, fæcal sac, and urinal sac. The "fundament-fire," rising up from the anus, digests the food that enters the stomach. If this fire either be in excess, or be deficient, disease will result.

FORMULÆ.

Naiyam—(Sternutatory.)—Take garlic, black pepper, and Asclepias juice. Mix them together. Then mingle with Noche juice, [*i. e.*, the juice of the Vitex Negundo leaves,] dry and powder. Blow some of this powder through an o'lai scroll-tube into the nostril.

Another Form.—Take dry ginger, white garlic, black pepper, black cumin, and mustard; roast and powder these, then grind the whole with Asclepias-milk. Then dry, and after again powdering, blow into the nostril.

Another Form.—Take dry ginger, Tippili, [*i. e.*, long pepper,] black pepper, cinnamon. Also take Káttotti, Perumarunthu, Nocchi, Kánrai. Dry these four roots well, powder and mix them with the above-named four spices, well pulverized. This compound to be blown up the nostril.

Turmeric Oil.—Ilavangam, (*i. e.*, cloves,) Samuthiráppacchai, (*i. e.*, Mentha Zeylanica,) Katkam,* Kathadakasingi, and Kárilayroot, (*i. e.*, root of Galega, Maximá,) Killapathiri-root, sesamum oil, castor oil, cocoanut oil, are boiled together to a wax consistence. To each quart of oil add a quart of turmeric juice.

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* A compound of many drugs.

Nacchennai—(literally, *Poison Oil.*)—Take white vitriol, blue vitriol, Areckanut, white frankincense, Vempd'dal, Kaippu, dry ginger, dry garlic, black pepper, flag-root, onion, leaves of Aristolœhia Ind. Powder all these, boil in sesamum oil, strain and use.

Vasaiyennai—[*Supple Oil*]—[*To Cure Rigidity of Joints, &c.*]—Take juice of fresh turmeric, juice of bryony stem, juice of Pirāli leaves, and young cocoanut water, of each one quart; of castor oil, three-fourths quart; sesamum oil, one-fourth quart; cinnamon bark, one palam; Velutthal gum, palam $\frac{1}{4}$; Kárpuká grains,* palam $\frac{1}{4}$; Fenugreek, palam $\frac{1}{4}$; O'mam, palam $\frac{1}{4}$. Mix all, and put in a vessel to soak for three days; then strain and keep for use.

Consultations—[*Two or more Physicians in one Case.*]—In case of fracture or dislocation of bone, of abscess, ulcer, wound, or such like, should fever or headache arise, while the surgeon should attend to the injury, a physician skilled in such symptoms should be called in for the treatment of the fever, &c. Moreover, should great pain, twinging, burning, &c., appear, the mandra-man should be called also.

The Anatomy of the Lens, and the Pathological Anatomy of Cataracts. From the "*General Pathological Anatomy of Cataracts.*" By M. CH. ROBIN. (Translated for the AMERICAN MEDICAL MONTHLY.)

The Anatomy of the Lens.—The crystalline apparatus is composed:

1st. Of the capsule or crystalloid of the seventeenth and eighteenth centuries, which is divided into two parts: the *anterior crystalloid* and the *posterior crystalloid.*

The latter projects into the vitreous humor; the former is bathed in the aqueous.

2d. Of the *layer* of *epithelium* of the *capsule* of the *lens* which is placed upon the internal or crystalline face of the anterior half only of the capsule. Pappenheim, Bruecke, Stellwag and others, have erred in supposing it to be placed on its anterior or iridial aspect. The cells have all the anatomical characters and all the modes of transformation of epithelial cells.

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* *Kárpuká arisi;* query: is this the same as *Kárppo'karisi*—Psoralea corylifolia?

3d. Immediately below the single row of epithelial cells, and in contact with it, are found the *cells of the lens*, which conduct imperceptibly to the *tubes of the lens.*

The latter are the direct result of the elongation and coalescence, end to end, of the cells themselves; and it is for this reason that these two elements have been mentioned in the same paragraph.

These cells and tubes form the superficial, soft, pultaceous, transparent layer which surrounds the lens, and constitutes the external fourth of its anterior half, and about the eighth to the sixth of its posterior half. It has been compared, in consistence, to a thick solution of gum.

4th. The centre or *nucleus* of the lens, below the soft layer, is composed of the *serrated fibres* or *proper fibres* of the lens.

The soft layer above, or rather the cells and tubes which compose it, dip down somewhat into the nucleus of the organ, in the following manner:

(*a.*) On the *anterior face*, following the direction of three lines or rectilinear planes, which radiate, like meridians, from the centre of each face to its circumference, diverging at an angle of 120°, one descends, the two others ascend obliquely.

(*b.*) On the *posterior face*, also, the cells dip down somewhat into the substance of the nucleus, following the direction of three radiating meridians, towards the circumference, but in a direction precisely the reverse of that taken by the lines of the anterior face; so that the radii of one face correspond to the inter-radial spaces of the other; but it must be remarked, that on the posterior face the superior radius bifurcates, very near the centre; at times, the two descending radii also bifurcate, but only near the circumference.

The increased thickness of the layer of *cells* and *tubes* of the *lens*, on the level of these lines or meridians, causes the meridians to present to the eye of the observer, in their normal state, the appearance of so many little clear radiating spaces. They are to be sought for especially in the eyes of infants.

But in certain morbid states, in which the cells offer a peculiar alteration, of which the nature will soon be remarked, and which renders them opaline and less transparent, these clear spaces become whitish, and more or less opaque. Such is the anatomical cause and characteristic alteration of the *cataract of three branches*, which is the simplest, and perhaps, too, the rarest of all.

We shall see in reality that the knowledge of the normal state which we have just been recalling will clear up, in a very satisfactory manner, the pathological anatomy of other cataracts.

The *cells* and the *tubes of the lens*, endowed with an extreme delicacy of structure and proneness to alteration, hold in point of fact the first rank in the alterations which we are about to describe.*

A RÉSUMÉ OF THE PATHOLOGICAL ANATOMY OF CATARACTS.

First Class—Lenticular Cataracts. First Species—Soft Cataracts. —Alteration seated in the soft, superficial, cortical layer of the lens. This alteration causes either several whitish or grayish opacities under the form of lines, points, &c., variously arranged, or one uniform opacity. In all these cases the lesion is the same, the difference being only in extent. The alteration of the cortical layer of the lens is due to the facts that, in consequence of derangements of the molecular nutritive process of renewal, and the development of its elements, the latter have undergone morbid modifications of structure, of which the following is a description:

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* The note which we place here, rather historical and anatomical than relative to pathological anatomy, is necessary to the proper understanding of the latter, and especially to connect the following descriptions to those which already exist in science.

The cells of the lens were seen first in man by Huschke, who called them *globuli lentis*, (1833;) then in the embryo by Valentin, (1835,) who observed fibres provided with future nuclei. They were likewise seen by Schwann, (1838,) who, as also Werheck, (1834,) noticed that some are provided with a nucleus, and others not. Henle described these cells exactly, but their nuclei less well, (1841.) Bischoff saw both the large cells with and without nuclei, and he noticed, (1842,) under the name of nucleated *fibres*, the tubes of the lens, (as proceeding from those cells only which are provided with a nucleus;) tubes or nucleated fibres, which, losing their nuclei and becoming flattened in the course of the phases of their evolution, become the *fibres* or *serrated bands* of the lens.

Since Bruecke showed that these cells are distinct from the epithelium of the capsules, (of which alone he incorrectly indicates the real seat;) that they compose what we call the *humor of Morgagni;* and that they constitute the substance of the divergent radii, little has been added to preceding contributions. The different explanations and theories which many authors have published since, have tended rather to complicate than to clear up the history of these elements. The greater part of anatomists and of physicians have even confounded in a single order of descriptions and considerations the epithelium which carpets and adheres to the capsule, and the *cells of the lens.* Some have said that the fibres proceed from the *epithelium*, becoming transformed into tubes, (Kölliker;) others, having perhaps only seen the cells of the lens placed in juxtaposition and become polyhedric, and not the epithelium, have said that it was not an epithelium, but special cells, which they found in the capsule, on the anterior face of the lens—while they have in reality found both. There can be no doubt, on reading the descriptions and the figures indicating the diameter of the *globuli lentis,* that under this name many authors have confounded together: 1st. The *cells of the lens* or the *humor of Morgagni* transparent, usually provided with nuclei, &c.; 2d. The clear drops, limpid, without color, or slightly rose-tinted, differing very considerably from one another in volume, which exude from all the elements of the lens after death, and in greater quantity in proportion to the time which has elapsed since death. Several observers, indeed, have seen only these drops, and not the cells.

These alterations consist principally in a tendency to a more granular condition, with a ribbon-like flattening of the tubes, which, at the same time, lose their nuclei. This granular condition manifests itself also at times in the serrated fibres. The cells of the lens have disappeared, and are reduced to granules, or rather, from being homogeneous and hyaline, have become granular. At the same time there are produced, between the flattened tubes, free molecular granules, minute limpid drops, and oil-globules; these latter have exuded from the substance of the elementary cells, or perhaps have preceded their disintegration.

There is, besides, a formation in this superficial layer of solid corpuscles, rounded, or of various forms, homogeneous or granular, imbedded or not in a substance of a waxy, homogeneous consistence. Finally, there is sometimes a deposit of phosphate of lime, mingled with traces of the carbonate of the same base. These various alterations result in a transition in the soft layers of the lens, and sometimes in its hard nucleus from their perfect homogeneousness and transparency, to a heterogeneous condition: to such an extent that the light, instead of passing through these tissues, is reflected by these various particles, and assumes a white or grayish tint, as we see occurring in every granular or heterogeneous substance on which the light falls.

Second Species—Liquid Cataract.—This presents a milky aspect, and there is found contained within the cavity of the capsule, as in a cyst, a whitish liquid, in which floats the hard nucleus of the lens. This liquid is composed of a fluid, holding in suspension fat-globules, corpuscles, and solid granules.

It is the change of the normal elements of the superficial layer of the lens to the condition of a liquid, holding in suspension and emulsion the aforesaid corpuscles and globules, which causes its reduction from a state of homogeneousness and perfect transparency to one in which the light can only traverse it imperfectly. It reflects it with a whitish color, as does every liquid holding in suspension solid corpuscles and drops of a liquid heterogeneous as compared with itself.

Third Species—Hard Cataracts.—These cataracts preserve to the centre the same anatomo-pathological composition as the soft cataracts; and this is not dependent upon the presence of elements essentially differing from those of the normal lens, if we except the solid corpuscles, whether granular or not, and the fat-globules which have exuded from pre-existent elements in a state of alteration.

The lesion consists specifically in an intimate modification of the cellular elements of the lens, causing them to become more solid, each one individually, and more adherent to one another than in their normal state. At the same time the elements, thus modified, become more granular, one of the essential causes of the opacity; the other causes being the production of solid corpuscles and the exudation of fat-globules.

Fourth Species—Stony Cataract.—This is rare, and is due to an incrustation of the anatomical elements of the soft and hard portions of the lens, which, however, are not destroyed. In this form of cataract the lens is of a grayish or chalky-white color.

It is hard and dense, especially on the surface, and friable, as though granulated; sometimes throughout its entire thickness, while at others it may present the stony condition only on its surfaces, the nucleus remaining little altered.

The lesion consists essentially in a calcareous deposit, principally composed of phosphate of lime, accompanied by a small proportion of the carbonate of the same base, incrusting, molecule by molecule, the elements of the lens, but not rendering them unrecognizable, if we dissolve out the salts by means of weak acids.

The action of these agents enables us to recognize here, also, spherical corpuscles, analogous to those of the hard and soft cataracts, which are also incrusted with the calcareous phosphate.

Second Class—Capsular cataract.

First Species—Pseudo-membranous capsular cataract.

This, as its name indicates, is characterized, anatomically, by the production of filaments, or of a fine pseudo-membranous layer, which probably originates from the iris, having been in communication with it, and ceases to adhere to it while it remains fixed to the iridial face of the anterior crystalloid, to its centre especially, which is its most prominent part. The morbid production consists of a non-vascular tissue, firm, somewhat difficult to tear, of a striated aspect; the striæ being sometimes undulatory, and presenting on laceration a lamellar rather than a fibrous structure. This tissue is usually incrusted, but only at a definite period after its appearance, by a quantity of microscopic granules, generally of a rounded form, composed principally of phosphate of lime, with a little of the carbonate of that base.

Second Species—Phosphatic Capsular Cataract.—This is characterized by the production of granules similar to those in the preceding class, and of the same nature, which are imbedded in the substance of the anterior crystalloid, but on its iridial aspect only.

The opacity manifests itself when these granules are sufficiently large and closely approximated to interfere with the transmission of light, and form masses of sufficient size to be perceived by the surgeon, under the form of spots, of lines, or of whitish points. It is much more rare than the preceding form. ☞

Preliminary Report on the Mortality and Sickness of the Volunteer Forces of the United States Government during the Present War.

By E. B. Elliott, Fellow of the American Academy of Arts and Sciences, and Actuary to the U. S. Sanitary Commission.

General Mortality of the Volunteer Forces.—From careful comparison and discussion of official data*—certain allowance having been made for estimated deficiencies in the returns—it appears that the number of *deaths* in the volunteer forces of the United States during the present rebellion, ("home-guards" and other bodies not in active service, not included,) has been at the annual rate of *fifty-three* (53.2) per 1,000 numerical strength—of which about forty-four (44.6) were from disease and accident, and nine (8.6) from wounds received in action. The rate among the commissioned officers was thirty-three (33.2) per 1,000, and among the enlisted men fifty-four (54.0) per 1,000.

It is believed that the above rates are somewhat understated, full allowance not having been made for probable defects in the returns.

They also, for another reason, understate the actual experience of those entering the service—deaths which occur during the year among those discharged from or otherwise quitting the service, not being taken into the account. Little or no information concerning the mortality of this class is at present on record. Eventually, however, the records of the Bureau of the Commissioner of Pensions may be expected to furnish important information in regard to it.

If we assume that the rate of mortality experienced by those who quit the service (by discharge for disability, desertion, or otherwise) is the same as those continuing in the service, to wit, 53 per 1,000—a very moderate estimate, since those discharged for disability are justly presumed to be at the time, in point of health, inferior to their comrades who remain—the estimated annual rate resulting would differ little from 65 per 1,000.

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* From the monthly Casualty returns made to the office of the Adjutant-General—many regiments, however, neglecting to make returns.

It appears from the returns that while the death-rate from wounds in action is greater with officers than with privates—being respectively 11½ and 8½ per 1,000—the death-rate of officers from disease and accident is much smaller than that of privates—22 for the former to 46 for the latter—and that the rate from all causes (embracing both disease and violence) is *less* with the officers than with the men —the entire rate for officers being 33, and for men 54 per 1,000.

It follows that the mortality (or liability to death) of officers from wounds received in action is about *one-third* (more exactly, 34 per cent.) *greater* than of the men; that their mortality from disease and accident is but about *one-half* (or 48 per cent.) that of the men; and that their liability to death from all causes (both disease and violence) is nearly *two-thirds* (or 61 per cent.) that of the men. The proportions that die of wounds out of the entire number wounded, and of disease out of the entire number taken sick, cannot be obtained from the returns now under investigation.

Another noticeable fact is the excess of the mortality due to disease and accident over that due to wounds in action—*two thirds* of all the deaths of the officers and *five-sixths* of those of the men resulting from disease and accident; the remaining one-third and one-sixth, respectively, being caused by wounds received in action. In the war of the Crimea, *seven-eighths* of the mortality in hospitals of the British troops during the entire campaign were due to disease, and one-eighth due to violence (this last term including deaths from accident, as well as deaths from wounds received in action.) In January, 1855, the month of the greatest mortality of that campaign, thirty-seven thirty-eighths (or 97 per cent.) of the entire mortality of the British troops resulted from disease.

Mortality by Seasons and Rank.—According to the returns, the average annual death-rate for the summer months (June, July, and August) was twenty-one (21.2) per 1,000 strength—of which thirteen (12.8) were from disease and accident, and eight (8.4) from wounds received in action; the death-rate of the commissioned officers being sixteen (16.0) per 1,000, and of enlisted men, twenty-one (21.4) per 1,000.

During the fall months (September, October, and November,) the average annual death-rate was thirty-six (36.0) per 1,000 strength—of which thirty-two (31.6) were from disease and accident, and four (4.4) from wounds in action; the death-rate of commissioned officers being thirty-two (32.1) per 1,000, and of enlisted men thirty-six (36.1) per 1,000.

During the winter months (December, 1861, January and February, 1862,) the average annual death-rate was seventy (70.3) per 1,000—of which fifty-eight (58.4) was from disease and accident, and twelve (11.9) from wounds received in action; the rate obtaining from all causes with the commissioned officers being thirty-six (36.1) per 1,000, and with enlisted men seventy-two (71.7) per 1,000.

Accordingly, it appears that the general mortality of the army has been gradually increasing since the commencement of the war; the rate for the autumn months being about *twice* (1.7 times) that indicated by the returns for the summer period, and the winter rate in turn *double* (1.9 times) that of autumn.

The defects in the earlier returns are believed to be greater than in the more recent; and the apparent difference between the winter rates and those of the summer and fall should, perhaps, be attributed in part, at least, to deficiencies in the returns of deaths for the earlier periods of the war.

Mortality by Localities whence Recruited, and by Rank.—The annual death-rate of the troops recruited in the New England States, according to the above-mentioned data, was thirty-six (36.1) per 1,000 strength—of which thirty-one (30.8) was from disease and accident, and five (5.3) from wounds in action; the rate for commissioned officers being sixteen (16.3,) and for enlisted men thirty-seven (36.7) per 1,000.

For the Middle State Group (including with the Middle States proper, the States of Delaware, Maryland, and Virginia) the annual death-rate was thirty (30.1) per 1,000 strength—of which twenty-seven (26.9) was from disease, &c., and three (3.2) from wounds in action; the rate for commissioned officers being twenty-two (22.4) per 1,000, and for enlisted men thirty (30.4) per 1,000.

The annual death-rate for the New England and Middle groups combined was thirty-two (31.6) per 1,000 strength—of which twenty-eight (27.9) was from disease and accident, and four (3.7) from wounds in action; the rate for commissioned officers being twenty-one (21.0,) and for enlisted men thirty two (32.1) per 1,000.

The rate for the Western Group (including, with the Western States proper, the States of the Southwest) was ninety-five (95.0) per 1,000 per annum—of which seventy-seven (76.8) were from disease and accident, and eighteen (18.2) from wounds in action; the rate for commissioned officers being fifty-nine (58.8,) and for enlisted men ninety-six (96.4) per 1,000.

It will be remarked that the mortality of the armies recruited at the West (and which as a rule operate at the West) is almost precisely three times (3.01) that of the troops recruited in the Middle and New England States (and which as a rule serve with the armies at the East,) the Western rate from wounds received in action being five (4.9) times, and that from disease and accident a little less than three (2.8) times as great as the corresponding Eastern rates.

Sickness-rates by Localities whence Recruited, by Seasons and by Rank.—A like contrast is observed in the *sickness-rates* of the troops East and West, the rate of the latter (one hundred and sixty-one per 1,000) being more than twice (more exactly 2.1 times) that of the former (namely, seventy-six per 1,000;) the average constant sickness-rate for the *entire* army, so far as returned, being one hundred and four (104.4) per 1,000 strength.

The constant sickness-rate for commissioned officers appears to have been only about two-thirds (or 65 per cent.) that of the enlisted men;

the rate for the former (officers) being sixty-nine (68.8) per 1,000, and for the latter one hundred and six (105.9) per 1,000.

Like the rates of mortality, the rates of constant sickness appear to have been greater in the fall than in the summer, and greater in the winter than in the fall; these rates according to the summer, fall, and winter returns being respectively seventy, (70.2,) ninety-two, (92.2,) and one hundred and eighteen (117.9) per 1,000 strength.

Excess of the Rates of Sickness and Mortality of the Forces at the War—Causes.—There is reason for the belief that the excess of the rates of sickness and mortality in our Western armies over those in the East is due, in no small degree, not merely to the greater activity of the former in the field, to over-exertion and exposure, as the result of severe and long-continued marches, and to stubborn and deadly encounters with the enemy in arms; but also, to badly chosen camp sites, to imperfect and neglected drainage, (the nature of the surface and soil not unfrequently being such that suitable camp sites, free from malaria, and affording ample facilities for drainage, could not be found if sought;) to the too crowded condition of hospitals; to less of variety in food, (soft bread and desiccated vegetables in very many Western regiments being seldom or never had,) and to less of skill and care in its preparation; to water of impure quality, and sometimes of insufficient quantity; to the greater disposition on the part of the soldiers to neglect appliances for personal comfort; and to the greater neglect of, or a lack of means for enforcing, cleanliness of person and camp.

Average Strength of Regiments.—The average strength of each of the regiments according to the entire returns, is 872; of which there are constantly 91 sick, and 781 effective; also, of which 35 are commissioned officers, and 837 enlisted men; the latter embracing non-commissioned officers and privates; the commissioned officers constituting four per cent., (4.0,) and the enlisted men ninety-six per cent. (96.0) of the entire strength.*

The average strength of each of the Eastern regiments (comprising those from the New England and Middle Groups of States) is 864; of which number 66 are constantly sick, and 798 effective. The average strength of each of the Western regiments, as returned, is 892; of which 144 are sick, and 748 effective.

Rate at which the Regiments have been Recruited.—According to the returns, the several regiments or corps of the entire army have been recruited in excess over discharged for expiration of service, during the nine months from June 1st, 1861, to March 1st, 1861, at the rate of 230 per 1,000 enlisted men.

The rate at which the regiments serving in the East have been recruited is 273 per 1,000 per annum. The rate of recruiting at the West has been 149 per 1,000 per annum.

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*According to the act of Congress approved July 22, 1861, the number of commissioned officers was fixed at thirty-eight; and the number of enlisted men at from 854 to 1,034; these last numbers include a regimental band of two principal musicians and twenty-four musicians, and also ten wagoners, one to each of the ten companies composing the regiment.

Rate of Recruiting Necessary to Supply Losses by Mortality and other Casualties.—To supply the continuous *losses* in the ranks of the enlisted men in the armies East and West, other than losses arising from expiration of service, requires recruits at the rate of nineteen (19.1) per 1,000 per month; or 229 per 1,000 per annum; of which last-mentioned proportion, 54 is the number required to supply the annual loss from deaths; 100 the annual loss from discharged from service, (mainly for disability;) 14 to supply the annual loss from missing in action, not afterwards accounted for; 50 to supply the annual loss from desertion, the deserters not subsequently returning to duty; and 11 the loss from other causes, specified and unspecified.

To supply losses among enlisted men in our Eastern armies, requires recruits at the rate of nineteen (18.8) per 1,000 per month, or 226 per 1,000 per annum; of which latter proportion 32 is the number required to supply the annual loss by death; 100 the annual loss by discharge from service, chiefly from disability; 79 the annual loss from missing in action and from desertions; and 15 to supply the loss from other causes.

To supply such losses in our Western armies requires recruits at the rate of nearly twenty (19.5) per 1,000 per month, or 234 per 1,000 per annum; of which latter proportion 96 are required to supply the annual loss from deaths; 101 the loss from discharges from service, mainly from disability; 35 the loss from missing in action and from desertions, and 2 from other causes.

Requisites to Secure a Constant Force of Five Hundred Thousand Effective Men.—Since one hundred and four (104.4) out of every thousand men (officers and privates together) in the entire army is the constant proportion of sick, it follows that, to secure in the field a constant force of five hundred thousand (500,000) *effective* (or healthy and able) men, the nation must constantly maintain, in hospitals or elsewhere, an additional force of fifty-eight thousand (58,000) sick men, making the entire force maintained, both sick and effective, to consist of five hundred and fifty-eight thousand three hundred (558,300) men; four per cent., or 22,000 of this entire force, would be commissioned officers, and ninety-six per cent., or 536,000, enlisted men. And since to supply continuous losses in the ranks of the enlisted men, other than losses from expiration of service, requires recruits at the annual rate of 229 per 1,000 enlisted men, it follows that to keep the ranks of these 536,000 enlisted men constantly full, will require annually 123,000 recruits; 29,000 of these recruits being demanded to supply the annual loss occasioned by death; 54,000 the loss arising from discharge from service, mainly from disability; 27,000 for excess of desertions over returns of deserters to duty; 7,000 missing in action, not subsequently otherwise accounted for, and 6,000 the loss from other causes.

To repeat—assuming the returns of the period from the 1st of June, 1861, to the 1st of March, 1862, as the basis of calculation, it follows that to secure in the field a constant force of 500,000 effective men, the nation must not only maintain 58,000 sick men, but it must also recruit the ranks of the enlisted portion of these forces with new material at the rate of 123,000 per annum, so long as the war shall last; a rate somewhat exceeding 10,000 recruits per month. Of these 123,000 annual recruits, 83,000 are to supply losses by death and discharges from service (exclusive of discharges for expiration of its term;) 34,000 for desertions and missing in action, (not returned or otherwise accounted for;) and 6,000 to supply other losses, specified and unspecified.

The five hundred thousand (500,000) effective men are equivalent in number to the number of men in 573 regiments of the average numerical strength, (that is, 872 men each;) and the 58,000 sick equivalent to 67 regiments of average numerical strength; the entire force of 558,000 men to be maintained being equivalent to 640 regiments of average strength.

So much respecting the casualties of our volunteer armies during the present rebellion.

We will now present for comparison the mortality rates of the soldiers in the armies of the United States during peace, and during the war with Mexico; also the rates of the British army and navy, "at Home" and "Abroad," during peace and war; also the rates obtaining among civilians in England and America at the military ages of life.

Mortality of the Army of the United States (Regulars) in Time of Peace.—The average annual rate of mortality for the army of the United States (regulars—mean strength 10,397,) during the eighteen years 1840–46 and 1849–59, (1847 and 1848, years of the War with Mexico omitted,) was 26 per 1,000; varying from 4 per 1,000 (at West Point) to 50 per 1,000 (on the southern frontier of Texas;) also varying from 9 per 1,000 (for the year 1845) to 80 per 1,000 (for 1849—a year noted for the prevalence of the Asiatic cholera, and also as immediately following the close of the Mexican war;) the highest rate of other years being 40 per 1,000 (that for 1841.) From the above it would appear that the mortality experienced during active operations by our volunteer troops during the present struggle, (*i. e.*, 53 per 1,000 strength,) is about double the rate experienced by our army (regulars) in time of peace (*i. e.*, 26 per 1,000;) and this rate (26 per 1,000) is in turn nearly three times as great as that of civilians at the same ages in England and America—rates varying from 9 to 10 per 1,000. [See Farr's English Life Table, 1841,* and Elliott's Massachusetts Life Table, 1855.†]

Casualties of the United States Forces (Regulars and Volunteers) during the War against Mexico.—The mortality of our troops during the Mexican war (1846, 1847 and 1848) appears, from returns to the office of the Adjutant-General, to have been at the rate of 118 per 1,000 per annum, 104 from disease and accident, and 14 from wounds received in action—a rate about two and one-fifth times as great as that experienced by our armies now in the field.

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* Sixth Report Registrar-General, (Eng.)

† Proceedings of the American Association for the Advancement of Science, at Montreal, 1857.

Our forces in Mexico consisted of regulars and of volunteers, the former embracing the "old establishment" (so called) of 15,736, and an "additional force" of 11,186 men. The number of volunteers was 73,532; the aggregate strength, regulars and volunteers, amounting to 100,454 men.

The old establishment was engaged in active service in Mexico 26 months; the additional force, 15 months; and the volunteers, 10 months.

The mortality in the old establishment was at the rate of 104 per 1,000 per annum, of which 23 was from wounds received in action, and 81 from disease and accident.

The mortality of the additional force was at the rate of 162 per 1,000 per annum, of which 10 was from wounds received in action, and 152 from disease and accident.

The mortality of the volunteers was at the rate of 116 per 1,000 per annum, of which 10 was from wounds received in action, and 106 from disease and accident.

From the above it will be seen that the death-rate from wounds received in action was much greater on the part of the old establishment than with the new recruits, (the latter comprising both the addition to the regular force, and the volunteers;) and that the rates of the additional force and volunteers were nearly equal each to each, and less than one-half (or 43 per cent.) that of the old establishment. It will also be seen that the mortality from all causes, including both disease and violence, was less with the "old establishment" than with the "volunteers;" and very considerably less than that of the "additional force," being about seven-eighths (or 88 per cent.) that of the former, (the volunteers,) and five-eighths (or 64 per cent.) that of the latter.

The above rates, although representing the mortality during service, are less than the rates actually experienced by those entering the service. The last-mentioned rates, to be complete, should include the mortality occurring subsequently to leaving the service, among those deserting, resigning, or discharged from the service. There are no records in the War Department concerning such mortality.*

The proportion *discharged* from service for disability, per order, and by civil authority, was considerably greater with the volunteers than with the regulars, being respectively 150, and 63 per 1,000 per annum; the rates for the old establishment and for the additional force (regulars) being almost identical—63.1 for the former, and 63.0 for the latter.

The annual rates of loss from all causes, except expiration of service—that is, for deaths, desertions, resignations and desertions—during the war, were, for the "old establishment" 234, for the "additional force" 275, and for the volunteers 334 per 1,000 strength; from which it appears that the rate of loss experienced by the additional force is one-sixth, (or 17 per cent.,) and that of the volunteers two-fifths (or 42 per cent.) greater than that experienced by the old establishment. The annual rate of such loss experienced by the entire force (regular and volunteer) was 296 per 1,000; a rate three-tenths (or 29 per cent.) greater than (229) the corresponding rate of the forces now in the field.

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* Valuable information bearing upon this point may doubtless be elicited from records concerning pensioners in the Department of the Interior.

The foregoing rates respecting the casualties of our army in Mexico are doubtless somewhat understated, a consequence of comparing the several classes of casualties with the maximum instead of the average strengths of the period.

Mortality of British Armies in Time of War; at divers Periods.—In the Peninsula, under Wellington, during active service for the years 1811–14, the annual death-rate for the British troops was 165 per 1,000 strength; of which 113 was from disease and accident, and 52 from wounds received in action.

During war (from 1801 to 1805, inclusive,) the annual death-rate of the British army "at Home" (and consequently inactive) was 18.4 per 1,000; which rate somewhat exceeds that ordinarily experienced in time of peace by troops "at Home." This excess may be due, it was thought, to the "return to the depots of their respective regiments of men debilitated by the hardships of active service."*

During war the annual death-rate of the British army "Abroad" (for the years 1803–12) was 80 per 1,000; of which 71 per 1,000 was from disease and accident, and 9 from wounds in action.

During war at "Home and Abroad," (1793–1815,) the annual death-rate of British soldiers was 56 per 1,000; a rate not differing from that hitherto experienced by our troops (53.0) during the present rebellion. Of the above rate, 49.5 was from disease and accident, and 6.5 from wounds in action.

Mortality of the British Forces during the Crimean Campaign.—The troops composing the British element of the Allied Army in the war against Russia began to arrive at Constantinople early in April, 1854, and were distributed in camps in the vicinity of Gallipoli and Scutari. Reinforcements continued to arrive until near the close of the campaign. During June (1854) the army was concentrated in Bulgaria at Varna; on the 6th of September next it embarked for the Crimea; the campaign closing about the last of June, 1856.

The numerical strength of the regiments or corps engaged varied from 8,571 in April, 1854, to 47,751 in September, 1855; the average strength for the entire period of 2¼ years (from April 1, 1854, to June 30, 1856,) being 34,526.

The soldiers, on their arrival in Turkey, were in a healty condition, the mortality experienced for the first three months (April to June, 1854, inclusive,) being at an annual rate of about 9 (8.8) per 1,000; a rate almost identical with that of civilians of the same ages at home. In July, the month following, the army being at Varna, the rate advanced to 160 per 1,000 per annum; the rate for the second three months of the campaign (namely, July, August, and September,) averaging nearly 300 (293) per 1,000 per annum, of which 96 per cent. was from disease. The rate for the next three months, (October, November, and December,) the army being now in the Crimea, was about 500 (511) per 1,000 per annum, seven-eighths of which was from disease.

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* Journal of the Statistical Society of London, (1856,) Vol. XIX., p. 235.

The mortality of the campaign culminated in January, 1855, during which month the rate was nearly twelve hundred (1,174) per 1,000 per annum; of which rate, 97 per cent. was from disease. At this rate, to supply the loss occasioned merely by death, this army would need be replaced by a new army of equal numbers once in about ten (10¼) months.

The average rate for the first three months of 1855—the period of greatest mortality—was about nine hundred (912) per 1,000, of which 98 per cent. was from disease. At this rate, the entire army would need be replaced by recruits, equal in number, once in thirteen months.

During the next three months (April, May, and June,) the influence of sanitary operations instituted by the British Government began to be felt, and the annual death-rate for that period fell to two hundred and fifty (250) per 1,000, of which six-sevenths (or 86 per cent.) was from disease.

From this time the rate gradually and rapidly diminished to the end of the campaign; the annual death-rate for the first three months (January, February, and March,) of the year 1859 being but seventeen (16.6) per cent.

The following contrasts illustrate the influence and utility of sanitary operations. During the winter of 1854–5—embracing the seven months from September to March inclusive—the annual death-rate was six hundred and sixty-five (665) per 1,000; during the corresponding seven months of 1855–6 the rate was reduced to forty-eight (48) per 1,000; a change in large part due to the influence of the sanitary measures instituted by the Government. For January of the year 1855, the annual rate was 1,174 per 1,000; for January, 1856, under the influence of sanitary measures, it was but 25 per 1,000. For February, 1855, the rate was 979 per 1,000; for February, 1856—one year later—the annual rate for the same army was but 12 per 1,000. For the first five months of 1855 (January to May inclusive) the annual rate was 616 per 1,000; for the corresponding months of the year 1856 it was reduced to 11½ per 1,000.

The annual rate of mortality experienced for the entire period (2¼ years) from the arrival of the army at Constantinople, to June 30th, 1856, was two hundred and thirty-two (232) per 1,000; a rate about four and one-third (4⅓) times that (53.2) experienced by our armies now in the field. Somewhat more than nine-tenths (93 per cent.) of the above rate (232) was from disease; and about nine-tenths of the deaths arising from disease were due, as is now the case with the armies of the United States, to preventable or Zymotic causes; diseases chiefly of the scorbutic and malarious type, which are readily checked by proper attention to the quality and preparation of food and drink, by judicious selection of camp sites, by avoidance of overcrowding in tents, and by efficient camp police.

British Armies in Time of Peace.—In time of peace, the annual death-rate for the British army "at Home," for various periods, appears to have been 16 per 1,000 strength, (15.90;) and "Abroad," 36 per 1,000, (35.80:) the average for the entire army being about 29 per 1,000.

British Navy in Peace and War.—In the entire British NAVY in time of peace, (1830–43,) the annual death-rate was 16 per 1,000, (15.97)—a rate almost identical with (15.9) that above mentioned for the British army "at Home," in time of peace.

In the British navy during war (1793–1815) the annual death-rate was forty-one (41) per 1,000 strength; of which 32 was from disease, 6 from shipwreck, and 3 from wounds in action.

Improved System of British Army Statistics—Results.—Under the new system of army statistics adopted by Great Britain, the mortality of the army "at Home" has diminished about one-half; the death-rate for the year 1859 being only 9 per 1,000; while the average of previous years in time of peace, for various periods, was 16 per 1,000, and for the ten years 1837–46, 17.5 per 1,000. In Newfoundland the rates fell, under the operation of the new statistical system, from 11.5 per 1,000 in 1837–46 to 4.8 per 1,000 in 1859. In Nova Scotia and New Brunswick it fell from 16 in the former period to 7.2 in the latter, and in Canada from 17.4 to 10.4 for the same periods respectively.

Under the new system—elaborated by a Commission consisting of Lord Herbert, Sir Alexander Tulloch, and Dr. William Farr—returns of the state and changes of each corps of the army are made WEEKLY to the Director-General. "The variable state of the army is thus brought clearly before the eyes of the Medical Department, the Commanding Officers, the Commander-in-Chief, and the Secretary of State, so that *evils*, INSTANTLY KNOWN, *can often be suppressed as they arise.*" *

The importance, in its bearing on the health and efficiency of the soldiers constituting our armies, of securing early and constant information as to the rates of sickness and death, and the immediate causes thereof, cannot well be estimated too highly or urged too earnestly.†

Conclusion.—From the facts herewith presented, it appears that the average mortality of our soldiers during the present war—exclusive of three months men, and of home-guards and other bodies not actually in the field—is much *less* than that generally of other armies *in active service;* is nearly the same as the average rate of the *entire* British army in time of war, (1793–1815,) an army composed both of troops in active service "abroad," and of men inactive "at home;" is greater than that of the British army in the Crimea, late in the campaign, after the institution and vigorous prosecution of sanitary measures; *greater* than the rate experienced by armies, British and American, in times of *peace;* and very considerably greater than that obtaining, during peace, in the army of Great Britain, under the new and improved system for the observation, record, analysis and publication of its state and changes.

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* Dr. Farr—Journal of the Statistical Society of London, (1861,) Vol. XXIV., p. 473.

† On this subject, MISS NIGHTINGALE, in evidence taken before the Commission appointed May 5th, 1857, to inquire into the regulations affecting the condition of the (*British*) army, says, (p. 368,) "It is obvious that what is wanted is for the Commander of the forces in the field, and the Secretary of State for War, to be made *instantly* and *continuously* acquainted (both as to an army at home and in the field) with not only (1) the real proportion of mortality; (2) the real proportion of disease; but also (3) the kind of disease and mortality."

The conclusions forced on the mind from the comparisons are upon the whole encouraging; and we may confidently hope by efficient sanitary measures, based on systematic methods of inquiry and publication, to check and diminish the hitherto comparatively moderate but increasing rates of sickness and mortality.

NOTE.—Since the foregoing report was prepared, it appears that the proportion of sick men present with the Army of the Potomac on the 10th of June, 1862, was fifty-seven (57) to every thousand (including the present and the absent;) and that two hundred and fourteen (214) of the entire force were absent —208 being absent with authority, and 6 without authority.

Assuming one-third of the absent to be sick—a rate not inconsistent with previous experience—it follows that 128 per 1,000 of the Army of the Potomac (present or absent) were then sick; a rate about one-fourth greater than the average rate indicated by the returns for the entire army for the nine months ending with the first of March previous—and about seven-tenths greater than such experience of the regiments from the New England and Middle States.

[NOTE.—The Report is accompanied by a number of interesting and valuable diagrams, which we regret we are unable to lay before our readers.—ED.]

The Italian Campaign of 1859—*Medico-Chirurgical Letters from General Head-Quarters.* By Dr. A. BERTHERAND, Principal Medical Officer of the First Class, etc., etc. Translated for the AMERICAN MEDICAL MONTHLY.

LETTER V.

From Castiglione to Cavriana—A Battle-Field—The Wounded of Solferino and the Amputations at the Ambulance Station of the General Head-Quarters.

TO DOCTOR F. BERTHERAND:

My Dear Brother—Battle-fields succeed and resemble one another with such uniformity in this Lombard land, the sadly privileged arena of war, that I will employ neither my time nor yours in detailing my journey from Castiglione to Cavriana, on the 26th of June, across the desolated regions of Solferino and Cassiano. For the first half of the way, the contest, rendered more desperate by the bare, unprotected nature of the ground, had swept away every trace of cultivation like an avalanche or an inundation. The vigorous stalks of the Indian corn lay prostrate everywhere, tangled and matted in the trodden earth of the furrows. The long files of mulberries, the pride and the fortune of these rich plains, mutilated by grape, now stand only as ranks of decapitated trunks.

Of the boundary stones which mark out the fields from Castiglione to Mantua, as indeed on all the highways of Italy, some are torn up, others dashed into fragments, while those least injured bear terrible scars. Amongst piles of shakos, knapsacks, uniforms, and shattered arms—lies here a broken-down wagon—there the entire load of a caisson thrown out by the Austrians to lighten their flight. A little farther on, wheels and broken axles attest the precision of the fire of our new artillery. The walls of Cassiano and Solferino let the sun shine through them, pierced in the morning for defence, riddled at night by assault.

Between these two villages a piece of the enemy's artillery had been overturned in a ditch by the roadside, and its drivers being unable to drag it out, had abandoned it. Alone—like that other last friend of misfortune in the *Convoi du Pauvre*—the dog belonging to the battery would not leave the piece under which habit, and it may be affection, held him enchained. His restless barking and plaintive and despairing howls seemed to reproach his master with forgetfulness of that fidelity which honor should compel in the soldier's heart, and of which a new and touching expression was revealed by the instinct of this brute!

I promised, my dear friend, not to stop too long by the way: I leave on the left, then, these steep counter-forts, intrepidly carried by our troops, retaken, lost, taken yet again by the Austrians, and finally left victoriously in our hands. This square pyramid, planted on the crest of a hill, like a light-house on the end of a promontory—but, to *watch*, not to *enlighten* the neighborhood—is the *Tower of Solferino*, la Spia dell' Italia. Despite the brutal shocks of the cannon, there still remain fragments enough of the old feudal manor, long to consecrate this burial-place of heroes. A group of soldiers whose eyes were fixed with attentive curiosity upon a small mound of earth, showed me the spot where, the night before, the Emperor and his escort were the mark of the enemy's balls. One of them struck the horse of the Surgeon-in-Chief, Baron H. Larrey, a little in front of the shoulder. Hæmorrhage from the external jugular made the immediate application of a ligature to this vessel necessary; after which, our learned inspector resumed, with no sign of emotion, the place which a glorious heritage has assigned him during this campaign, the post of honor and of danger.

It is eleven o'clock when we enter Cavriana, a miserable straggling village, whose ordinary resources have been still further reduced by the catastrophes of war. The imperial party could find but a single dwelling for their shelter on the night of the 24th, and this had been occupied until the last moment of the fight as the General Head-Quarters of the enemy. Thus, at an interval of a few hours, two Emperors had sat down under the same roof, at the same table, on the same memorable day, which was to determine for them fortunes so opposite.

Every one was, therefore, reduced to camping out under the walls of Cavriana, and my ambulance corps not being able by any mode of reasoning to claim an exception, I did as everybody else did. To cap the climax, a temperature of 84° in the shade soon changed our tents into sudatoria, in which it was impossible to stay, even flat on our backs. As for myself, I should never have been able to reduce to order the reports which the Surgeon-in-Chief and the Commissary demanded of me, but for the hospitality, not altogether disinterested, I imagine, of an old woman who lived near by. The presence of the soldiers evidently made her anxious for her back-yard, her mulberries, and her kitchen-garden; and she was probably not sorry to place her property, for the time being, under the protection of an *embroidered collar*. But to come to my report, of which the following is, in brief, the substance:

"Including three amputations of the thigh, performed immediately upon our arrival at Cavriana, among the wounded Austrians, whom we found laid under the galleries of a miserable guard-house, and whom for want of any other suitable premises, I was obliged to use my authority to quarter in the principal church of the village, the total number of operations performed at the ambulance station of the General Head-Quarters, from twelve o'clock on the 24th to the same hour on the 25th, amounted to forty-three. This number was composed of the following details:

Amputations.	Thigh	7
	Leg	4
	Arm	9
Disarticulations.	Forearm	3
	Shoulder	4
	Two fingers	2
	One finger	8
	One entire median phalanx	1
	One terminal phalanx	5
Resections.	Two metacarpals	1
	One phalanx	2
	Total	43

"11 of these operations were done by myself;
7 by the Principal Medical Director, M. Leuret;
7 by Surgeon-Major of the 1st Class, Leroy;
2 by Surgeon-Major of the 2d Class, Lecomte;
2 by Surgeon-Major of the 2d Class, Jacquemin;
7 by Assistant Surgeon-Major of the 1st Class, Guiches;
3 by Assistant Surgeon-Major of the 1st Class, Riolacci; and
4 by Assistant Surgeon-Major of the 2d Class, L'honneur.

"Though administered indiscriminately to all these cases, chloroform did not cause the slightest accident. We must not omit to mention here its singularly variable results as regards the promptitude with which insensibility was induced, and the precursory phenomena of anæsthesia. While the wounded Austrians dropped, so to speak, asphyxiated, as if struck by lightning, on the first inhalation, the French, laboring under a high state of nervous excitement, entered, as soon as the effects of the chloroform began to be felt, upon a stage of most energetic contraction, extremely difficult to control, and quite impossible entirely to subdue. I was the more struck with this condition from the fact that I had never noticed anything of the kind in my administration of chloroform to the numerous wounded of the different expeditions of Kabylia, in Algeria, or among the Kabylians themselves. I ought to add, too, that privates were especially affected in this way, to the almost total exclusion of the officers.

"A single death followed immediately after the operations just enumerated. The case was that of an officer whose thigh was amputated very high up by M. Leroy, for a badly comminuted fracture of the femur. Forty-three other wounded men have died, the victims of lesions which grant little grace—those of the chest, of the head, and especially of the abdomen."

I have few remarks to make touching the operative procedures which were employed. The circular method, offering a sure, simple, and generally easy manipulation, still remains the classical method, preferred by military surgeons. My object in performing several amputations or resections, in the presence of our *confrères* of the General Head-Quarters, by means of a single anterior or lateral flap—with complementary circular section of the soft parts, in the cases of the thigh and leg—was especially to demonstrate the superiority of this mode of operating. More expeditious, inasmuch as it dispenses with the laborious dissection of a sleeve of integument, it assures regularity and a good degree of thickness in the stump; and it avoids the inconvenience of corrugated central cicatrices in the application of an artificial limb. Finally, favoring the prompt union of the soft parts, the mere weight of the flap bringing it down over the oozing surfaces, it prevents better than any other mode the projection of the bone or conicity of the stump. In the articulations of the extremities, take, for example, the shoulder, when the injury to the bone throws a doubt on the expediency of resection, what an advantage is gained by uncovering the seat of the difficulty by means of a large flap, and thus being able thoroughly to appreciate the extent of the wound, and with a complete acquaintance with its cause, to decide the operative indications dependent thereupon!

A unique case of hæmorrhage, occurring at Castiglione in the case of an officer, a short time after the dressing of an amputation of the arm, necessitated the ligation of the humeral artery in the wound. Dr. Leroy arrived in time to remedy the accident, and the patient has recovered. Was this a case of loosening and dropping off of the ligature as it is conceived may happen from the effects of the jarring of transportation? Or should we rather suppose that in the hurry and excitement of an operation performed upon the battle-field, a false knot had been applied? A third supposition is that the brachial, temporarily obstructed by a clot or a plug of muscular tissue, may have escaped the thread of the operator.

Let me say, in passing, and without offensive allusion to any one whomsoever, the ligation of arteries, after amputations, should be regulated not by the jets of blood which present themselves, but by an exact anatomical acquaintance with the principal vessels of the region. If they retract themselves from the surgeon's sight, they must be patiently and persistently sought for.

How often have well-known arteries been supposed to be abnormal, rudimentary, or wanting, and yet given rise to secondary hæmorrhage! I can cite an example of recent occurrence, the better as it concerns myself. Performing an amputation of the forearm, at the upper third, at San Martino, I was unable to discover the radial, nor was there any trickling from it. Wearied by fruitless searches, I at last decided to apply the dressing. In half an hour after it was dripping with warm blood. Removing the dressing, I finally succeeded in seizing my artery, which was oozing from the middle of a contracted and extremely dense fibrous envelope. I was obliged to cut through this in order to disengage the mouth of the vessel, which was deeply retracted. I ligated it, and the danger was over.

Besides the capital injuries which led to the amputations recorded above, I find in my notes as having been all visited and dressed:

8 fractures of the facial bones.
6 fractures of the thigh, (amputation not performed.)
2 fractures of the head of the humerus, (amputation not performed.)
1 fracture of the wrist, (amputation not performed.)
1 fracture of the tarsus, (amputation not performed.)
4 wounds of the head.
1 wound of the spine, (lumbar.)
2 penetrating wounds of the abdomen.
1 fracture of the leg, (amputation not performed.)
2 wounds of the bladder.
1 wound of the chest.
2 fractures of the forearm, (amputation not performed.)
1 wound of the pubes, with rupture of the urethra.
1 fracture of the hand.
1 wound of the larynx.

1 deep wound of the thigh, the projectile buried in the ilio femoral muscles.

I. triple wound of the left hip, the right thigh and the left elbow; this last, complicated with a comminuted fracture of the joint and a considerable loss of arterial blood, led to the immediate amputation of the arm in its continuity.

I. Wounds of the face, generally complicated with fractures of the teeth or jaws, imperatively demand the extraction of splinters of the first and second order; that is to say, those which are loose and those which are still somewhat adherent. To fulfill this indication properly, demands repeated examinations in the sinuses, the fleshy portion of the cheeks and the nasal fossæ under the tongue, and even into it when it is involved. When bony points protruding into the interior of the mouth threaten the safety of the tongue, or lead us to fear a subsequent interference with its functions, or deformity, they must be carefully resected. The difficulty is thus greatly simplified, and the duration, so tedious to the patient, of the fœtid discharge of wounds bathed in saliva, much abridged. These little operations, after which the wounds in question should usually heal well and rapidly, were often complicated at Castiglione with hæmorrhages from the arterioles lodged in the anfractuosities and canaliculi of the bones of the face. The tampon not proving always successful in checking the flow of blood, we employed the persulphate of iron, which M. Monsel has proposed to substitute for the perchloride; our experiments are not yet sufficiently conclusive to enable us to pronounce definitively on the relative efficacy of this styptic. I give a few especially remarkable specimens of this kind of lesion.

A., a corporal in the 72d of the line, was struck under the lobe of the left ear by a ball, which, penetrating transversely and horizontally, passed out under the lobe of the right ear. I introduced successively my finger and a female sound along the course of the projectile, and discovered that it had grazed the posterior columns and posterior surface of the velum of the palate and lacerated the tonsils. There was no hæmorrhage nor a single splinter in this wound, which, when we consider the nature of the parts which surround it, was truly extraordinary.

M. M., a captain in the 11th Regiment of Artillery. The ball entered the middle of the lower lip and passed out behind the mastoid process of the left side. Destruction of the symphysis of the chin; extraction of a large splinter; hæmorrhage arrested by the persulphate of iron.

C., 1st Zouaves, 3d Battalion, 4th Company; ball passing from the right commissure of the mouth to the middle of the ascending branch of the maxilla of the same side. Extraction of several splinters at the orifices both of entrance and exit. Removal of two teeth left entirely bare.

Captain S., of the Engineers—a ball entering under the symphysis of the chin, and passing out between the lower lip and the anterior surface of the corresponding incisors. The margin of the bone is cut and broken, without destroying the continuity of the inferior maxilla.

In the case of G., a private of the 34th of the line, the ball, before penetrating the superior maxilla of the left side, between the ala of the nose and the labial commissure, lacerated the cheek in such a manner that the face presents a hideous spectacle. After having washed the wound and removed all the splinters, Principal Medical Director Leuret proceeded to adjust the lacerated strips of flesh by means of interrupted sutures, and succeeding in accomplishing a very useful restoration of the lip and nostril.

II. The fractures of the thigh in which we thought it our duty to reject, or at least to defer, amputation, justified our attempts at conservative surgery, by offering the following conditions: 1st, Simple or slightly comminuted fractures of the thigh, with the surfaces of coaptation more or less irregular, but without marked deviation of the extremities from the axis of the bone, as is observed when there is crushing or splintering of the bodies; 2d, The immediate extraction of the splinters, which are loose or slightly adherent, and of inconsiderable size; 3d, The absence of grave complications, of hæmorrhage, of foreign bodies buried in muscular regions, etc.; 4th, The ability to remove the patient to a short distance from the field, in order to apply promptly, and at the same time without subsequent removal, the local and general means of treatment which his condition demanded.

Such was the situation in the case of Col. S., chief of the Engineer Staff of the 1st Corps, wounded on the outer side of the left thigh, at its upper third, by a fragment of a *ricochet* ball, which was extracted at the moment of receiving the wound, under the form of a small metallic disc. Assuring myself by palpation that the fracture was very simple, I applied Scultet's apparatus, with Surgeon-Major Jacquemin's assistance, and the Colonel was immediately carried to Brescia in his carriage, in which I caused a swinging litter to be arranged. All accounts received of him up to the present day promise a favorable union. Of the five others in the same category I have, as yet, no intelligence.

The official correspondence of the surgeons of hospitals in the interior of Italy announce to the Chief of the Medical Service of the Army, it is said, an altogether unlooked-for proportion of probable cures of fractures of the thigh, rescued from the harsh sentence of amputation. We earnestly pray that these facts, thoroughly verified and carefully registered, may prove so numerous and authentic that precise inductions may be drawn from them with regard to two points: 1st, The absolute curability of comminuted fractures of the thigh in armies; and 2d, The relative chances for the recovery of the patient with or without amputation.

III. Division-General L., of the 1st Corps, and Colonel M., of the 1st Zouave Regiment, were both wounded in the shoulder by balls. In the case of the first, the ball hollowed out a gutter along the external face of the head of the humerus. There seemed to me to be no complete fracture of the bone, only splintering to a slight extent. I removed the loose fragments, leaving the other to the eliminative efforts of suppuration. The General has since received a ball in the right groin, which, making its way horizontally towards the left groin, glided between the integument and the muscles in front of the pubes, as far as the superior insertions of the femoral adductors. Neither the finger nor the sound can detect anything at the end of this long tract, nor does any prominence or hardness denote the presence of the lead from without. The corresponding coxo-femoral articulation is free; there is no pain, no difficulty of locomotion. Nature's must be the care of preparing its ultimate extraction, by an inflammatory process, terminating in an abscess; unless, indeed, accommodating herself to the presence of a foreign guest, she preserves it by surrounding it with an isolating cyst—a termination sometimes observed, but of slight probability in this case, considering the great motility of the region involved.

Colonel B's wound is equally severe, and even more curious. This officer contracted the habit, during a tour in Sweden, of wearing a flannel vest lined with buckskin. The projectile, striking the prominence of the shoulder, passed through all the clothing except the lining of the vest, which, yielding under the pressure, followed the ball like the finger of a glove, without tearing, to the very centre of the head of the humerus. The fact of the lining being whole, and its peculiar situation, contra-indicated any search for the body which caused the wound. I could only recognize the good condition of the bone and the absence of crushing and splintering, and remove a few grains of osseous matter from the wound. Not only was an operation useless in my eyes, but I thought it my duty to forewarn the patient against any propositions of resection that might hereafter be made to him by others. The result up to this time has justified my prognosis: the injury is being repaired well, and quite rapidly.

IV. I will cite farther, as attempts at conservative surgery crowned with success:

1st. The removal of the second and third fingers of the right hand, which I performed in the case of Commandant P., of the 5th Hussars, whose hand was horribly torn by a musket-ball. Beyond a small abscess in the palmar region, this wound, now under the skillful care of Assistant Surgeon-Major Miche, is daily progressing to cicatrization.

2d. The case of Captain P., of the 1st Regiment of Zouaves, whose cubitus and radius had been fractured by a ball passing over the posterior surface of the forearm. The sentence of amputation had been pronounced, and the wounded man, resigned to his fate, begged that the operation might be performed as soon as possible. Examination of the parts showed me a fracture double and comminuted certainly, but with a small number of short splinters, which could easily be extracted. Under such circumstances, what necessity is there for haste, particularly in the case of an upper extremity, where, with a little careful watching, secondary amputation will always find a timely indication?

3d. Commandant K., of the 72d Line, struck with a ball, which entered at the inner side of the articulation of the os calcis and the astragalus, and was extracted from under the skin of the dorsal region of the foot, against the external border of the cuboid. Numerous splinters were removed, resulting in the formation of a wide, free canal in the centre of the tarsus, having an inclination favorable to the escape of pus. Constant cold irrigation was employed. Its present condition is very satisfactory.

V. The extreme gravity of wounds of the skull, of the vertebral column, and of the abdomen, explains why we observe so few of them, in comparison to lesions of other parts of the body. They are, in fact, the wounds which produce immediate death most certainly.

Colonel B., of the 43d of the Line, presented a considerable loss of substance of the right parietal bone, with destruction of the *dura mater*, permitting the pulsations of the brain to be distinctly seen, in a portion of that organ, which protruded considerably through the opening. No symptom of paralysis or of compression for the first five days. On the sixth, acute encephalitis terminated his sufferings.

In the case of Captain B., of the 84th Line Regiment, who was struck with a ball full on the vertebral column, at the level of the eleventh dorsal vertebra, I witnessed hyperæsthetic phenomena of the most violent character. This unfortunate officer was instantly seized with paraplegia. Raising himself upon the bed which he occupied in the Civil Hospital, and writhing in the most agonizing sufferings, in his despair, he shrieked aloud for death. Inspection of the wound furnished no surgical indication of a nature to procure for him the slightest relief. The probability is, that the spinal marrow was irritated by spiculæ of bone, or by the roughness of the ball, altered in shape by striking the spine. Opium could scarcely bring momentary ease to the wretched man. He died after the expiration of several hours of fearful agony.

Lieutenant-Colonel B., of the 44th Line, pierced by a ball through the right loin, at the level of the kidney. The small intestine is implicated. Pressure and percussion reveal abdominal effusion. Vomiting on every attempt to drink his *tisane*. In the course of the evening peritonitis makes its appearance, and fæcal matters appear at the orifice of exit, in the centre of a fungoid protrusion of omentum. Death after forty-eight hours.

VI. As an instance of a wound of the genital organs, I cite the case of Captain T., of the 15th Line. A ball struck him a little above the crest of the right ileum, and was extracted near the middle of the left groin. This long passage is fortunately subcutaneous for its entire length, but the penis must have been injured at its root. I question the patient, but he insists that he has lost no blood by the urethra; however, he has not urinated since receiving the injury. An exploring sound, introduced into the canal, stops at the pubes, where it enters a sort of *cul-de-sac*, (the track of the ball,) and immediately an abundant discharge of blood takes place through the catheter. I am ignorant as to what has become of this officer, in whom, be it understood, I allowed the sound to remain.

VII. General D. had his foot in the stirrup to mount, when he received a ball in the fold of the left buttock, which penetrated from behind forwards, in the direction of the pelvis. On his arrival at Castiglione I examined the wound, and my finger, reaching the ischium, finds this apophysis denuded and rough. Has it been broken or pierced by the projectile? Has the bullet, which evades all our investigations, fallen into the pelvis, or, reflected by the tuberosity, has it changed its course and entered the fleshy mass of the adductors of the thigh? In any case, the sharp pains which shoot along the sciatic nerve, the depth of the lesion, the extent and irregularity of its course, and the fracture of the ischium—limited, as we suppose it to be—indicate, in our eyes, serious danger.

VIII. I shall not stop long to consider penetrating wounds of the chest, whose interest lies principally in the subsequent progress of the effusion. To speak of them, I should need to follow my cases for a long time—longer than is permitted me. But the following is an example, as sad as it is rare, of the terrible consequences which may ensue from a lesion of the upper part of the respiratory apparatus. A private of the 1st Regiment of Zouaves was struck in the neck by a ball, which destroyed the middle portion of the thyroid cartilage. Although the foreign body was extracted and the wound dressed in the usual manner, the air passing out forcibly by this opeing penetrated the cellular tissue of the anterior cervical region. The œdema reached the glottis and the surrounding tissues. In vain are the parts explored; in vain do we attempt to free the trachea from its obstructions, and to re-establish the passage of the air by the introduction of a sound: the wounded man, unable to bear any interference, tore off every dressing, repelled every manipulation, and went off to die at the end of the ward in the most agonizing spasms of suffocation.

IX. A wound of the elbow, followed by amputation of the arm, in the case of a Corporal of the 74th Line, deserves to be reported, from the singularity of the projectile which caused the injury. This young soldier had the elbow-joint pierced through and through by the square stick of a congreve rocket, (more than a yard long and two-thirds of an inch thick.) The most extraordinary part of it is, that this javelin remained implanted in the limb, whence he himself drew it, and made use of it as a cane to assist him in walking to the ambulance. On examining the joint after amputation, I pointed out to the assistants a quantity of fragments of wood firmly fixed in the articular cartilages, among the osseous splinters of the humerus.

X. One of the most interesting incised wounds of the campaign is, unquestionably, that of Lieutenant D., of the Mounted Chasseurs, who received a sabre stroke across the face at Solferino. The entire lobe of the nose, with portions of the cheeks, and a considerable extent of the upper lip, were detached. Being thus turned inside out, they fell, by their own weight, in front of the chin, leaving bare the superior dental arch, the anterior segment of which was separated, with its four incisors, two canines, and one molar. A suture, very dexterously applied by M. N. Perier, Principal Medical Director, so perfectly adjusted the borders of this immense solution of continuity, that the external deformity is scarcely noticeable. The loss of a part of the palatine arch, indeed, interferes somewhat with articulation; but this difficulty can easily be remedied by the aid of an artificial obturator.

XI. Authors on military surgery have related such very extraordinary facts with regard to the inclosure of projectiles of a large size as compared with the region in which they have been found buried, that such observations, although bearing most trustworthy signatures, have with difficulty acquired a place in the annals of the art. I confess that, for my own part, I have never been able to divest myself of a certain amount of distrust in regard to them. It is not without a motive, then, that I call attention to the two following cases.

Captain P., of the Algerian Sharpshooters, (a temporary regiment,) had the first phalanx of his right thumb fractured by a ball. The bone is fairly pulverized. There is but a single cutaneous opening, situated on its dorsal surface, shaped like a button-hole. Parting its lips, a metallic surface, apparently that of a fragment of a bullet, is perceived. Surgeon-Major Leroy proceeds, in accordance with my advice, to extract the broken phalanx, preserving the phalanget, as well as the flexor tendons, intact. To our great surprise, when the fragments were removed, he drew out from the bottom of the wound a large conical ball, entire, and scarcely at all flattened.

General A., of the Artillery, was struck on the morning of the 24th by a ball, which shattered the left shoulder. He was brought to the ambulance of the Head-Quarters of the 2d Corps. The shock was excessive, and the loss of blood considerable; the nervous system so much depressed that any operation which would be attended by further hæmorrhage was considered dangerous before the commencement of a healthy reaction. On the following day his condition seemed favorable for the removal of the humerus, which was literally ground to dust. The articulation having been laid open, together with the anterior axillary region, the surgeons found, upon reaching the bottom of the wound, an *entire six-pound shot*,* so tightly imbedded between the infra-scapular fossa and the ribs, that it was with difficulty removed.

It was my sad duty to receive the General at Castiglione after the operation, and to bestow upon his desperate case all the attention called for by a terrible injury, and sympathy for a great man. But the shock sustained by the economy, the severe compression of the tissues by the forcible entrance and prolonged lodgment of a hard and heavy body, left but a small chance for the skillful operation of our colleague, M. N. Perier. Stoically resigned to the sacrifice in which his heroism had staked his life, the General yielded, on the 29th of June, to the fatal grasp of the gangrene which had attacked the wound. Not far from the bed of suffering, we could, all of us, see the projectile, brought from the ambulance by eye-witnesses of the operation—a glorious relic, coveted by curious science, but not likely to be long left in its possession by the pious veneration of family and friends.

I stop, my dear friend, for I feel that interest begins to flag—if, indeed, it has not too long since done so—in this necessarily barren sketch of so many pathological cases, so hastily observed. Such, however, is the characteristic physiognomy of military surgery; active, extemporaneous, adventitious, like the abrupt, rapidly-succeeding, and unanticipated events on which it depends. In the camp, the recollections of last night, even the impressions of to-day, rapidly vanish, ruthlessly pursued by the necessities of the hour and preparations for the morrow. While I have been trying, at twenty several sittings, interrupted on all sides, and in every possible way, to put upon paper a few

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*In my Fifth Letter, which appeared in the *Medical Gazette of Algeria*, September 30th, 1859, it is spoken of as an eight-pound shot. Such was, in fact, the first estimate that was given me of the weight of this projectile, which has no analogue in the French Artillery. I have since had an opportunity to verify this assertion, by weighing a similar shot, which I picked up on the battle-field of Solferino; its exact weight was 7 pounds, 4 ounces.

commemorative outlines of this day of Solferino, a day of triumph for the army combatant—and not without honor, nay! glory, for the Medical Staff—the march of the army has brought us from Cavrian to the heights of Volta. Beneath us flows the Mincio, beyond which, the enemy, defeated less than a week ago, is preparing, they say, for our battalions a desperate resistance and new successes—for our ambulances, new opportunities for zeal and devotion. I am right, then, you see, in hastening to bring my journal up to the times, and, the better to hold myself in readiness for coming events, to bring this colloquy abruptly to a close by subscribing myself, as ever,

Your very devoted and affectionate brother.

Volta, *June* 10*th*, 1859.

REVIEWS AND BIBLIOGRAPHY.

Dentition and its Derangements. A Course of Lectures delivered in the New York Medical College. By A. Jacobi, M.D., Professor of Infantile Pathology and Therapeutics, etc. New York: Baillière Brothers, 440 Broadway. 1862.

"Dentition *without* Derangement" would have been a more appropriate title for the work before us, if, indeed, "Dentition" should have entered into it at all. If it be true that the profession and the public have made a "scape-goat" of this physiological process to conceal their own ignorance and relieve themselves of troublesome processes of investigation, it is none the less true that Prof. Jacobi has not been more scrupulous in making it a pretext for the public diffusion of his own knowledge, and the indulgence of his powers of research, on topics very remotely connected with his subject. That his book displays both these characteristics, we have neither the wish nor the ability to deny. But as regards the latter, we must be allowed to submit that for a foreigner, in America, to write a work on the growth of the teeth, and confine himself entirely to European authorities, when America is the acknowledged centre of dental art and science, is not only in bad taste, but indicates a disinclination to avail himself of the labors of our home investigators, scarcely to be reconciled with the catholic spirit of scientific inquiry. We must heartily thank him, however, for having virtuously abstained from defacing his fair pages by an array of stellated foot-notes, giving the chapter and verse of every one of his references, as his countrymen are so fond of doing. We are quite ready to trust him for the correct quoting of his authorities, and perfectly willing to believe, if he wishes us to, that he has consulted all the musty folios that have treated of his subject back to the time of Hippocrates. And now that we have introduced that noble old thinker, we must give our readers the benefit of a quotation which Prof. Jacobi gives to his, as an illustration on our part of how singularly the desire to prove a certain thesis, and the conviction of its truth, warp our judgment as to the meaning of others. Will it be believed that the following, from the works of the Father of Medicine, is adduced as evidence that he did *not* "cherish the opinions of more modern doctors," that dentition *may* be a cause of disease! "In those children who have proceeded to the age in which they get teeth, there will occur a disagreeable itching in the gums, fever, convulsions, and diarrhœa, and particularly at the time in which the canine teeth will protrude." Can it be doubted that the old philosopher considered the mutual relation of these phenomena as something more than a mere coincidence in point of time? And yet such is the construction which our author would have us put upon it. In his desire to set the profession right—for he tells us that his work is intended for the profession only, which forbids the idea that he is combating *popular* error—he conjures up a frightful amount of ignorance and credulity on the part of his brethren for the sake of controverting it. A long string of diseases is trained out, such as glossitis, parotitis, retropharyngeal abscess, erysipelas, catarrh of the bladder, incontinence of urine, ischuria, balano-posthitis, and catarrh of the vagina, which we had never dreamed of attributing to dentition, and a most careful analysis of their history and symptoms, which well repays the reading, is given in order to prove that they may be produced by other causes, and that they do not result directly from the one in question. But when finally he sets up the man of straw, "slow dentition the cause of rickets," and makes a full tilt upon it in all the panoply of historic tables and chemical analysis, he becomes too Quixotic to provoke anything more than a smile.

We cannot but feel that these ably written lectures must lose much of their real value in general estimation, from the fact that they take extreme and indefensible ground on a subject which really needed a similar, but more moderate treatment. Doubtless the teeth of infants are made the "scape-goats" for much medical ignorance, and the doctors need badly enough to be told of this; but the Professor's sweeping exclusion of the teeth from infantile diagnosis will convince his well-informed readers of little else, we fancy, than that dental science is too commonly a shadowy and unexplored region to even the best read of our medical authorities. If Prof. Jacobi, instead of ransacking European literature, some of it a generation old, had looked at some of our American dental works, common and accessible to all, he would have found the subject treated plainly, and yet scientifically, by men whose special business it is to study these very matters. America furnishes the world with dental surgeons, and needs only to be asked, to furnish it also with dental science. But the Professor must needs go to Delabarre for his sport, and elsewhere for such trash as this: "Transparency of teeth, according to Rudolph, and bluish-white color, according to Duval, are symptoms of rachitis; semi-transparency, as of horn, of herpetic predisposition; semi-transparency and milk-white color, of scrofula and tubercles; yellow and white spots, intermingled, of derangement of general development; small white, yellow, or brown spots, of commencing caries."—P. 23. Now nobody ever saw a *transparent* tooth, while bluish-white teeth are extremely common in this country, where rickets is so rare a disease. Any dentist, too, would laugh at the attempt to distinguish by the mere test of color, or of *intermingling*, the yellow and white spots of deranged development, and those of commencing caries; in fact, the one often passes into the other. We dwell on this passage, taken at random, as a sample of what is written and quoted as authority about the teeth.

Prof. Jacobi dwells at much length on the assertion that dentition cannot be a disease. We doubt if anybody ever supposed it was; neither is pregnancy, nor parturition, both purely physiological phenomena, but both, like dentition, none the less *causes* of disease. To quote from one of the excellent American works which the Professor does not seem to have seen: "Dentition is not, in itself, a morbid process, but a healthy physiological act. It would be strange, therefore, if it necessarily involved disorder of function and serious consequences to the subject. The truth is, that when naturally performed, under the favorable circumstances of sound constitution and good health, the cutting of the teeth is effected without pain or any collateral evil. . . . . Dentition demands a certain amount of constitutional energy to accomplish it. The rapid development of any organ does this. The changes which take place at puberty, and the evil consequences to the feeble, of the developments then completed, are illustrative of this fact. This demand is the severest test of functional and organic completeness in the child, and many will not bear it."—*Bond's Dental Medicine*, pp. 168, 170.

Here is the whole thing in a nutshell. Dentition is a healthy process, but an exacting one, and in infants *predisposed* to disease, may readily prove the exciting cause. The testimony to this fact is too full and respectable to be disposed of with a sneer; and yet this is all the answer our author deigns to give to Marshall Hall's very direct and weighty opinion.

"There is no practical fact, of the truth and value of which I am more satisfied, than that of the effect and efficacy of scarification of the gums in infants; and not in infants only, but in children. But the prevailing, I may say the universal, idea on this subject is, that we should lance the gums only when the teeth are ready to pierce through them, and only at the most prominent part of the gums, and as the occasion to which I have referred may require; and no idea of this important measure can be more inadequate to its real value. The process of teething is one of augmented arterial action, and of vascular action generally; but it is also one of augmented nervous action; for formation, like nutrition, secretion, &c., generally, is always a nervo-vascular action; and of this the case in question is, from its peculiar rapidity, one of the most energetic. Like other physiological processes, it is apt to become, from that very character of energy, pathological, or of morbid activity. It is obviously, then, attended with extreme suffering to the little patient; the brain is irritable, and the child is restless and cross; the gums are tumid and heated; there is fever, an affection of the general vascular system, and there are, too frequently, convulsions of various degrees and kinds, manifested in the muscles which move the eyeball, the thumb and finger, the toe, the larnyx, the parietes of the respiratory cavities; and the limbs and frame in general, affections of the excito-motor part of the nervous system, and of the secretion of the liver, kidneys, and intestines, affections of the ganglionic division of that system."

"It is to the base of the gums, not to their apex merely, that the scarification should be applied. The most marked case in which I have observed the instant good effect of scarification was one in which all the teeth had pierced the gums. Better scarify the gums one hundred times unnecessarily, than allow the accession of one fit of convulsions from the neglect of this operation, which is equally important in its results, and trifling in its character. And it is not merely the prominent and tense gums over the edges of the teeth which should be divided; the gums, or rather the blood-vessels, immediately over the very nerves of the teeth, should be scarified and divided. Now, while there is fever or restlessness, or tendency to spasm, or convulsion, this local bloodletting should be repeated daily, and in urgent cases even twice a day. A skillful person does it in a minute, and in a minute often prevents a serious attack; an attack which may cripple the mind, or the limbs, or even take the life of the little patient, if frequently repeated. There is, in fact, no comparison between the means and the end; the one is trifling, and the other so momentous."

"There is a phrase among nurses, viz., the breeding of teeth, which may be taken as evidence that *before* the teeth actually reach the borders of the gums, they may prove the source of much irritation."

Let us quote another American witness directly on this point: "This simple operation (cutting the gums) often succeeds after all others have failed. We have frequently known children, after suffering the greatest agony for days and weeks, and until they had become reduced to mere skeletons, *obtain immediate relief without any other treatment.*"—*Harris's Dental Surgery*, p. 131, sixth edition.

The number and completeness of such observations is too great to suffer from Prof. Jacobi's unlucky diagnosis, p. 129. A case from our own experience may be interesting on this point. About a year ago we were called to see a child, 11 months of age, in consultation. It had generally been a healthy child, but had had a similar attack some months before, just preceding the appearance of its first teeth, and ceasing therewith. Its present illness had already lasted a month, beginning with the simple vomiting of its milk—(the mother did not nurse it)—which grew more and more frequent, then became complicated with diarrhœa, which at one time was a very prominent symptom, but later gave place to constipation. There was a good deal of restlessness, especially at night. The child had grown rapidly thinner and thinner, until it was distressing to see; and yet all the time it had a craving appetite, and would take food eagerly, but only to throw it up again. The family doctor was at a loss, and the parents alarmed. We looked at its mouth, and found four incisors in their places, but none of the others promising to appear at present. As no lancet was at hand, we suggested that the doctor should cut the gum above several of the teeth, *until he felt the knife touch the tooth.* Next day we saw the child again. The gums had been cut late in the evening, and the child had passed the best night it had had for a long time. But unfortunately, (and it is very unusual,) one of the incisions had continued to bleed, and the child had sucked considerable blood. Styptics were applied, with temporary success, but bleeding again came on, until finally the solid nitrate of silver, sharpened and thrust into the wound, stopped the leak. Thus the case was alarmingly complicated; and yet, without any other treatment, in three or four days the child was able to take chicken broth, grew rapidly stronger, and soon returned to its milk without any further difficulty. It is now a fine stout child, and its teeth are especially beautiful and regular.

Almost any practicing physician will recognize this as a type-case of similar ones which have occurred in his own practice. The relief given by the operation in such cases is too immediate and too decided to admit of its being called a *post* and not a *propter*. We can even recall an instance where a child was in the habit, when it began to feel the discomfort arising from the tension of the gum as a new tooth was forcing its way up, of going to its father, and with open mouth mutely ask for a repetition of the "scientific butchery" from which it had before experienced so much relief.

Now, if Prof. Jacobi had recognized what really exists as the result of disordered dentition, his very just strictures upon professional carelessness and maternal folly would carry greater weight. In his endeavors to instigate to a more earnest spirit of investigation, a more rigid and careful system of inquiry into the manifestations of each particular case, especially if an infant, and a more accurate, thorough, and conscientious diagnosis, no one will second him more cordially than ourselves.

While we are on this topic of "lancing the gums," a word may not be out of place as to the *modus operandi* of the relief obtained by incisions. The growing tooth is enveloped by a saccular membrane, continuous with the periosteum which surrounds the neck and fang, and secretes (afterwards) the cementum. This dental periosteum is a highly important structure, well worthy of far more study than it has received. All judicious dentists recognize and respect it, for they know how highly vitalized it is, and how fruitful of mischief it becomes in disease. It is to this organ that are due those long-continuing and deep-seated facial neuralgias, which, like many more obscure symptoms of nervous derangement, are often suddenly and permanently relieved by extracting a diseased tooth. Now this membrane, so powerful in the adult, and so persistent in its bad effects, but so easily deprived of all harmful power, is the inclosure within which the growing tooth is formed; and surely it is no stretch of credulity to believe that any fault or imperfection in this delicate process may as readily disorder the extremely sensitive nervous system of a child as may another form of diseased action in the same organ disturb the action of the adult system. The purpose, therefore, in cutting, is to relieve any undue tension of this membrane, and to do this, of course the knife must penetrate to the tooth. Prof. J's fancy about *scratching* the enamel is one of those points which show that his lectures are based more on theory than on observation. Frequently, as was the fact in the case above related, the relief is required and obtained by incising, some time before the tooth finally appears through the gum. The Professor may disdain the term, but the nurses are not so far out of the way—disturbance frequently occurs when the teeth are "breeding."

The theory advanced in opposition to the performance of this operation—that the *cicatrix* resulting will form a dense, hard, band over the tooth, thus impeding its egress—we had thought to be pretty much exploded, and should have been inclined to place it among the "old women's fancies," over which the Doctor makes himself so merry. In the first place, the mucous membrane is possessed of such astonishing reproductive powers that its losses are repaired by almost the identical tissue which was destroyed; and in the second, it is an established fact, as we suppose, that a cicatrix even of the external cuticle is more readily absorbed than the healthy skin itself, in consequence of its deficient nutrition. Where do we look for the ulceration to take place from the pressure of an artificial limb—on the sound portions of the stump, or at the cicatrix?

There are three propositions on which the Doctor virtually founds his argument, which may be succinctly stated thus:

First.—No process or condition can be assigned as a cause for any pathological condition unless it can be distinctly proved to be the sole cause, both predisposing and exciting, and unless the result can be traced directly to it. His own very beautiful elucidation of the manner in which fever may be produced, by irritation of the dental ramifications of the fifth pair in dentition, based upon the theories of the German school and of Prof. Schiff, of Switzerland, is a sufficient answer to this.

Second.—The fact that a number of causes may exist for a certain result makes it highly improbable that any one of these causes is efficient in any one case. Thus, (page 61,) "Whenever salivation is produced in a young child, you have to bear in mind all the possible causes of catarrh of the mouth and salivary glands, or of nervous, either peripheral or cerebral, irritation. If you do, you will have less to say on teething or the teeth, but be more of a thinking, physiological physician." In other words, when a healthy child six months old, which eats, sleeps, and performs all its functions well, is shown us, with a stream of saliva incessantly pouring from its mouth, we are to sit down and gravely consider whether the little innocent is suffering from "ulceration of the stomach, cancer of the stomach, the premonitory stage of vomiting, colic from helminthiasis, certain stages of pregnancy, hysteria, or intermittent or typhoid fever;" in all of which the professor tells us "there is superabundant secretion of saliva;" but we are by no means to consider the fact that a dozen or more adamantine points are forcing their way through the tissue of its gums, and that Nature is doing her best to prepare this tissue for their passage, and to control the irritation which would otherwise result.

Third.—That when a physician directs his remedies to a morbid condition, instead of, or in addition to, addressing himself to its cause, he virtually ignores the cause. "Nor is anything in the medicinal treatment, which can be taken to announce any direct connection between gastric catarrh and difficult dentition. Neither calomel, nor rhubarb, nor bismuth, nor alkaline carbonates, nor nitrate of silver, nor muriatic acid, all of them much used in the gastric catarrh of infantile age, is known to ease the protrusion of teeth; they are administered for their direct effect on the mucous membrane of the stomach."—(P. 75.) As well say that, because we administer laxatives in the constipation and buchu in the dysuria of pregnancy, we do not therefore acknowledge any connection between these disorders and the physiological condition which they accompany.

We admire in the book a fearless spirit of investigation, a bold attack upon professional ignorance and incompetence, and a careful summing up of modern pathological developments, in a manner best fitted to utilize them. The chapters on fever, on infantile paralysis, and on the neuroses, require and deserve careful study. But we cannot but think it would have been more useful had it taken less extreme ground, and been penned in a less dogmatic spirit.

In conclusion, we would point out a few clerical and typical errors, which should hardly have been allowed to creep into a work which had already appeared in print. The Professor is made to speak (p. 62) of "the removal of part or the whole of the tonsils, by means of a simple *bougie*."

On page 48, we read: "The mucous membrane of the mouth, although normal, is generally of a deeper color than the *exception perhaps of constipation*." The conclusion of the first part of this sentence is to be found on page 50, where it stands written: "I have to state finally, that there is no such thing as odontitis proper, the dental tissue being too hard and deprived of *normal appearance of the gums.*" But where the "constipation" fragment is to find its antecedent, we leave to some one else to discover. ☞

EDITORIAL AND MISCELLANEOUS.

— Our readers will have seen from the first article of the present number, that our neglect of them has not been either intentional or avoidable. We can only express our sincere regret that they should have been kept waiting so long for our issues; but while doing so, we congratulate both them and ourselves that, notwithstanding the haste in which we left, we were able to secure the services of a gentleman whose previous acquaintance with the Monthly enabled him to take up the scattered threads of material which we left and weave them into three numbers possessing so much interest.

We trust, moreover, that the delay in bringing out the present number will not be considered entirely an evil, inasmuch as in consequence of it we are able to give our country readers, who we know are always interested in any matter which recalls to them their student days, and who enjoy comparatively few opportunities for sitting at the feet of Gamaliel, some idea of the opening lectures of the different schools in our city. It is a wise precaution of our State which makes students exempt from the call to arms, however great the emergency. Nor is it any reproach to the numbers of young men who present themselves this year at our institutions of learning, that they are here rather than on the battle-field. The youth who has spent years of preparation in patient study, in order that he may fit himself to become a student of our noble science, does not do his country so great a service by rushing into the ranks and shouldering his musket, as by repressing the tumultuous urgings of his impatient spirit, and quietly setting himself to work to acquire that knowledge which will enable him successfully to assuage the sufferings and heal the diseases of those who have borne a more active but not a more real or serviceable part in this great struggle. Therefore it is that we are glad to chronicle the fact that there is no falling off, but rather a gain, in the classes of nearly all the colleges.

Taking the schools in the order of the dates on which their courses commenced, the Introductory Lecture of the New York Medical College was delivered on the evening of Monday, October 13th, at the College, by Prof. Holcomb, the Professor of Ophthalmic and Aural Surgery.

The night on which the Doctor had, himself, first sat expectant to hear the words of wisdom which might fall from the lips of some father in medicine, was not so far distant but that he could recall it for the benefit of his hearers, and placing himself in their stead, give them some wholesome advice as to how best attain the grand object with which they entered upon their labors. "I cannot doubt," he said, that

"The great desire of each of you is to become thoroughly accomplished physicians; and believing this, I think we may profitably consider what is the proper course for you to pursue in order to accomplish this most laudable object of your ambition."

After putting a series of searching questions to the young aspirants, as to the real motives which decided them in their choice of a profession, he continues:

"We have all heard persons asking, 'Can you tell me where I can find a *good doctor*?'

"Now what do the public mean when they inquire for a good doctor? This opens a broad question, viz.: What are the public which ask for a good doctor? From considerable observation, I know that the masses, or the public, differ very greatly in different countries as regards their views and conduct towards doctors of medicine. There are various reasons for this. In many European countries the profession is protected by laws so stringent that it is impossible for any but licensed practitioners to carry on their vocation. Hence the people are forced to be killed or cured; at any rate, to be treated by physicians authorized to practice their profession.

"In those countries the doctor of medicine is looked upon with great respect, and treated with an attention and consideration nearly equal to that shown the curate or clergyman. There the doctor is an important character in society; has an imposing bearing, carries himself with great dignity, and considers the respectful attention of the people as very natural; and the people look upon him as acquainted with all diseases, and as having the ability to penetrate the mysteries of the human system, and cure its ills, if within human power.

"Happy people, and fortunate doctors! Their faith saves them. But the truth is, that the masses in Europe are not as well-informed as in America. They allow, and expect, their superiors to do their THINKING. How is it with us in America? What man, woman, or child, even, allows another to do his or her thinking? No one has ever had the least idea of procuring a substitute in the conflict of minds. We each, as it were, fight on our own individual ability and responsibility, and meet with calmness the result of the warfare. Whatever this result is, we are ever better prepared for the ensuing struggle."

An alarming prospect, certainly, for the timid beginner, but the professor kindly reassured him with the assertion,

"If you know your profession as you should, you will be able to give a satisfactory answer to all those who can appreciate your reply; those who cannot, you ought soon to convince of their ignorance by a few well-directed *questions*."

His answer to the question which naturally follows, "How can we become good doctors?" was comprehensive and just.

"By patient and never-ending investigation of the human system in health and disease, and after death. In no other way, by no other process, can you attain a well-founded knowledge of your profession.

"You will immediately perceive that I propose no easy task. You must be life-long students of your profession. Not advancing is not only remaining stationary—it is *falling in the rear*. The question, as it appears to me, is, Are you prepared, not to become doctors of medicine, but students of medicine? It then comes to this: What is the requisite preliminary education to fit you to study medicine? I answer, the *best* you can have is the *necessary* education for you to become learned physicians. If any one thing has kept back, and is still holding down the medical profession in America, it is deficient early education—it is superficial teaching; *i. e.*, it is IGNORANCE. Oh! that our young men would thirst after knowledge! Oh! that they would better appreciate that, especially to the physician, 'knowledge is power;' not only medical knowledge, but all knowledge! Oh! that this seeking after gold would cease, and that the free and abundantly-flowing fountains of wisdom, which are so seldom sought, whose waters are so sweet and life-sustaining, would be surrounded by throngs of American youth, thirsting for and obtaining that which satisfieth!"

Then followed an ingenious illustration, which we have not space to give in full, showing that as those who would reap the benefits of a course of mineral waters must take them under intelligent advice, and after a proper preparation of the system by a previous course of hygiene and medication, so "those who present themselves at the fountains of knowledge" should be fitted by a thorough preliminary education to profit by the advantages there so generously poured forth. Adverting to the necessity for stricter legislative requirement, he enforces it by the following sad and mortifying truth:

"Let me talk more plainly still. I have known American medical students and doctors, who could not speak or write the English language correctly—whose compositions were disgusting and disgraceful to men of education and refinement. Is it inappropriate, then, gentlemen, for me to ask if you can speak and write your native language correctly? If you cannot, would it not be better for you to depart from this place, and go where they teach the orthography, etymology, syntax and prosody of the English language?

"When your preparation is complete, you will receive double advantage from further opportunities to gain higher knowledge. There is nothing for which I would not sooner excuse a candidate for the degree of Doctor of Medicine, than ignorance of his own language. The medical student should be accomplished in all the elements of a sound education. He ought to have finished the chemistry of the schools, and be prepared for the higher departments of analysis and toxicology. Elementary botany should be as familiar to him as his alphabet. He should be able to read any ordinary *Latin*, and know sufficient of *Greek* to recognize instantly the derivation of medical and compound words. It is so easy to read *French*, that one, after a few months' study, ought to construe with facility almost any sentence. I would urge, also, the study of *German*. Its intimate connection with English, and the vast amount of German medical literature, render it almost absolutely necessary for one at least to read this language. We have, too, so many very learned German practitioners in America, that one unacquainted with their language would constantly find himself quite unpleasantly ignorant of the great advances made by our medical brethren in Germany. Again, it is a very common affair for young American doctors, after graduating, to visit France and Germany. We will suppose you are there. Consider, for a moment, what a ridiculous appearance you would present if Velpeau, at the Charity Hospital in Paris, should speak to you, and ask your opinion, as is often his custom, about some patient under observation. I need not describe to you how you would writhe with mortification at your ignorance, and how you would blush with shame that you could not reply intelligibly. You would immediately reflect that the waters of that spring were too strong for your constitution, and determine to take a mild course in French. Or suppose you were to present yourselves at the Charity Hospital in Berlin, Prussia. The keen eye of Virchow would soon detect you as Americans, and consequently he would feel his usual interest to find out if you knew anything. He might ask you about the pathology of some case in hand. In your confusion you would possibly answer, 'I no speak *Dutch*, doctor.!'" 'Oh! then speak English if you will,' he would reply calmly. I fear you would soon find out that he (like most German professors) knew much about English, and that you knew very little about pathology. So you would bear a double shame, and reflect but little credit on your native country."

"Ours is almost the only country where the mind of each individual is brought into active operation, where every channel is open freely to all, where each mind is individually responsible for its failure or success, where birth is not a passport to distinction, and where riches do not of necessity entail power on their possessor. This is the land, gentlemen, in which you will probably pursue the practice of medicine, and it is my solemn conviction that it is the most difficult place on the earth to practice any profession—and especially the profession of medicine. Why is this? The fact simply is, that there is hardly an

American youth but that, either in the common school, academy, or college, besides the elementary branches, has studied natural philosophy, chemistry, mathematics, botany, physiology, music, Latin, French, &c., &c., and almost always the heads of families have popular treatises on the allopathic, homœopathic, hydropathic, eclectic, and spiritualistic methods of treating diseases. In addition to this, they assume to be theoretical politicians and theologians. If they really knew all they think they do, it would not be at all objectionable—quite otherwise—but they have not yet learned that they really know almost nothing of medicine at least.

"*These* are the people with whom you will have to deal; they will ask more questions, raise more objections, have more reasons for doing a certain thing, propound more theories, relate more experiences, and state more similar cases cured in such a manner by such a doctor, than any people under the sun.

"These are the people who ask, 'Can you tell me where I can find a good doctor?'"

The remainder of the lecture was occupied with references to the several departments of the medical curriculum and introductions to the gentlemen filling them. The professor was particularly earnest in cautioning his class—

"To be faithful in their study of medicines and their uses; but not to try so much to learn certain prescriptions, as to ascertain the actual therapeutic properties and doses of vegetable and mineral remedies, together with their chemical composition. In this manner you will cease to be dependent on any one for given prescriptions for diseases—for you will as naturally make your own formulas, as will a man who thoroughly understands the principles of mathematics."

In speaking of his own branch, he said:

"To show you how these diseases are taught in Germany, I will state that Prof. Von Graëfe, in Berlin, lectured from November till March, once a week, on diseases of the cornea alone—and remarked, when closing, that he regretted that time would not allow him to finish what he had to say on the subject, but that he hoped to have the pleasure of meeting the students again the next season, when he would finish it in a more complete manner."

He concluded in the following earnest strain:

"You should regard it as your sacred duty to teach man how he may avoid disease, how he should live, so as to preserve his health and increase continually in mental and bodily vigor, until his allotted three-score and ten shall have arrived, and then, as his mind and body, sound as at birth, pass gradually into second childhood, his spirit, the perfected fruit of a well-spent life, will return to its Maker, and his body go down to the dust from whence it was taken."

The Bellevue Hospital School followed on 15th of October. The Introductory was delivered by the younger Flint, Professor of Physiology; and a young and enthusiastic teacher in a young and vigorous school might well be pardoned for alluding, in terms of self-gratulation, to the brilliant success which has marked the commencement of this undertaking. The advantages of clinical instruction were thus ably set forth:

"Formerly teachers of medicine went into the most elaborate descriptions of diseases, their symptoms, treatment, &c., and the sole opportunities which were afforded the student for verifying these statements were in the few cases he was enabled to see with his preceptor in the intervals between the courses of lectures, and one or two cases which might, as an extraordinary thing, be shown to the class. The deficiency in this mode of teaching is too evident to require discussion; and the palpable necessity of illustration led to the gradual establishment of college clinics, and the inauguration of occasional clinical lectures in hospitals. But this did not meet the difficulty. Patients come into a college clinic and are seen by the lecturer for the first time. He has had no time to give the case proper study; he often feels compelled to give a definite opinion immediately, makes his prescription, and the patient is dismissed. The action of the remedies and the verification of the diagnosis are never known. Most of the class have hardly seen the patient clearly enough to recognize him again, even if they had the opportunity. The young student is discouraged with the apparent facility with which the diagnosis is made and the proper remedy applied; more discouraged, probably, than he would be, if he could follow out the case and attempt to verify what had been told him. To this is added an occasional clinical lecture at the hospital; but these take place so rarely, and the time is so much occupied with purely theoretical instruction, that the progress of cases is not and cannot be watched from day to day. The lectures are necessarily disconnected, and students reap hardly any more practical benefit from them than from the college clinics. Medicine is by no means an easy study. It requires for its acquisition the highest qualities of mind, and the most careful and systematic aid from a teacher. Mere descriptions of disease are always at the command of the student in his text-books. But he requires assistance in his study when he attempts to verify these descriptions in actual cases, and apply his theoretical knowledge at the bedside. Where clinical instruction is not constant and regular, and where it does not form a great part of the course of teaching, the student has merely repeated to him what he may find in books, and is left to make his own way at the bedside, where he most requires the aid of a competent instructor. A student thus educated may be able to pass a very satisfactory examination in the green-room; but in that self-examination at the bedside of his patient, where the responsibilities are overwhelming, his deficiencies will be fearful.

"In Great Britain the points which I have touched upon have been fully appreciated. There colleges are attached to the great hospitals, and a student has an opportunity of learning medicine by a study of actual diseases, not by a mere description of them. No small hospital will suffice for thorough teaching; it must be of sufficient size to enable the teacher to illustrate, by selected cases, nearly all the diseases of which he treats in his regular course. As illustration is the only true method of teaching, it must not be left to chance to present cases of particular diseases; the school must have a sufficient number of patients at command to be able to show what the student will meet with in his practice. A complete course can only be given by presenting examples of all important diseases. These advantages can only be presented in a large hospital."

In allusion to the aims of the Medical Board and the happy results which had already crowned their efforts, the Professor said:

"This is an age of certainty and demonstration. All things must be considered doubtful until actually attained. Though we felt the same confidence in the system of our organization a year ago as we do now, the realization of our success, which is even beyond our hopes, is inspiring. When our first course of lectures commenced, the Faculty was earnest and hopeful; the friends of scientific progress, who had become interested in our scheme, watched anxiously its first trial; our aspirations were high; we would not be content with any partial success—we aimed to add lustre to Bellevue Hospital, as well as enjoy the advantages of its prestige and reputation. We aimed to be the first Medical College in the great City of New York, and the first in our great country; and hoped to see the day when the nation would be proud of our institution, and our diploma would rank with the best in Europe. Our hopes have been encouraged, and our aspirations are not diminished. While our beloved country has been convulsed by the most terrible conflict of modern times, our purpose has been unchanged. We commenced at an unpropitious time; but had we failed in attaining the success which we thought our due, we would have been but stimulated to greater efforts."

The unusual opportunities offered to the young practitioner by the present war were adverted to as follows:

"Science is universal. It belongs to no section and to no country. Friend and foe have an equal claim on the true physician. The noblest service that can be rendered by man to man, or by a citizen to his country, you will have in your power to perform when you are finally sent forth from these halls of instruction. To soothe the pain of those who bleed in our common defence, to restore to duty those who have passed through the fiery ordeal of experience, will be the office of those who may follow our armies. You, gentlemen, will not be forced to take your first practical lessons at the expense of those who are entitled to the benefit of experienced skill. There never was a time when the skill of experienced surgeons was as valuable as it is now. There never was a time when a young man just entering on his professional career was so liable to be taxed with the heaviest responsibilities. Think of the battle-field, where thousands may at any time be dependent on the knowledge and self-possession of a simple assistant surgeon. When any one of you may be compelled to decide upon and immediately execute the most serious operations, with no one to go to for counsel, your acts perhaps known only to the soldier who is relieved, and to Him who notes the sparrow's fall. While the maddening excitement of battle is raging; while thousands are forgetting everything in the fury of attack, exposing themselves to dangers which, in moments of less excitement, would appal the stoutest heart, you may be called upon to remember what will be taught you in this room, and what you will see in the wards of this hospital. Without excitement, with no hope of the glory which is the soldier's ambition, you must perform your work of mercy. The soldier serves his country; the military surgeon his country, God, and humanity."

The student was encouraged to a diligent prosecution of his labors, not alone in the hope of winning a pedestal in the Valhalla of Science, but for the sake of a good conscience towards God and towards man, and of the enjoyment of the labor itself. We quote again:

"It is one of the great charms of our science, that it is never stationary; always progressive, and no one can lay claim to a scientific character if he stop by the roadside. But there is a great and important lesson, which you must learn in your student's life, which is, in itself, worth all the mere facts you may accumulate in your brain for years; and that is, how to study. The most laborious industry, and the most brilliant intellect, if used at random, may only render the possessor remarkable for great errors. In the annals of science are recorded the names of those who accomplish; not of those who might have accomplished, or who speculate on what may be worked out in the future. It is not only necessary for you to learn what has been accomplished in our profession; you must know how it has been accomplished; you must be taught how to work. In the lecture-room, it will be the duty of your teacher to sift the good from the bad; but this cannot be forever; you will soon have to judge for yourselves; and unless you have a correct method of study, you will too often be led astray. Endeavor to learn, then, how the great men of our science have worked, and you will be able to discriminate between that which will stand the test of time, and that which must fall before experience. There are men in our ranks whose names have become imperishable, from being connected with great discoveries. They should be your examples; and the discoveries are hardly more important to learn, than the processes by which they were arrived at. We cannot all make great discoveries; but when we reflect on the manner in which these great truths are developed, we can, most of us, contribute something to the general result.

"The idea that great discoveries are the results of inspiration, or the absolute necessities of genius, is erroneous. It is not the genius of one man, as a general rule, which makes a great advance in knowledge; it is the combined labor of many. The glory attached to the discovery of the circulation of the blood was reserved for Harvey; but the pulmonary circulation was described years before by Servet, and the pulse was spoken of by Hippocrates. One of the most brilliant discoveries in modern physiology is that of the function of the pancreas. To Bernard, as most of you are aware, belongs this honor. But years before its discovery by Bernard, the pancreatic juice was obtained by Eberle, and its action on the fats alluded to. At the time of the experiments of Eberle, the necessity of the emulsion of the fats before they could be absorbed was not fully recognized. It was supposed that the chyle, which fills the lacteal vessels, consisted simply of the articles of food reduced to their final degree of elaboration; and the constitution of that fluid was comparatively unknown. Had the experiments of Bernard been made at that time, the discovery would not have been made; but the gradual march of science from the time of Eberle to that of Bernard brought it to a point when some definite change was known to take place in the fats; the object of finding the fluid which produced this change was well defined; and the intelligent experiments of the most eminent physiologist of the present age produced definite results. The most difficult of the books of Nature is the study of the physiologist. Nothing is translated from it without the most careful study. The experimentalist is continually propounding questions to Nature in the shape of his experiments; but to elicit a satisfactory reply, these questions must be intelligent. We must know what we are looking for; and, though of course the result of our experiments cannot be foretold, they must be made with a definite object. The reply to a physiological interrogatory which would not be understood in the days of Haller, is a revelation in the days of Bernard. It is the progress of science which gives to its votaries the clearer understanding; and when we ask to whom this progress is due, individual glory pales before the modest silvery light which shines from a thousand points, enduring from age to age. A thousand unpretending searchers after truth advance our beloved science to the point where a Harvey writes his name in letters of fire. Study, then, how to labor! Fit yourselves for a place among the number of those who cannot work for the glory of their profession without advancing the interests of the great human family!"

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"When, after years of preparation in order to be able to work for one's self, and after years, perhaps, of labor, a great discovery is made; when phenomena which had before been unexplained are accounted for for the first time; when to the eye of the patient physiologist are revealed the hidden mysteries of nature, and one sees what has never been disclosed before to mortal man, the happiness of that moment should outweigh the applause of the world. When, after years of patient investigation, Sir Humphrey Davy discovered the metal potassium, he is said to have danced around his laboratory for joy. This was not the selfish joy at the prospect of the renown which would be attached to his name by this great discovery; it was the delight of a just and self-sacrificing mind at seeing the glorious result of his long labors. Such are the possibilities of a few; but let not this discourage you, for we can all take our place among those more obscure, but not less meritorious, who labor for the good of humanity, and without such great rewards, assist in the gradual progress of science."

The University and the College of Physicians and Surgeons opened their regular courses together on the 20th of October.

At the former, the students were welcomed to their five months' work by the well-known Professor of Obstetrics. If even in a learned treatise on a scientific subject Dr. Bedford finds it impossible to restrain the natural exuberance of his poetic and thick-coming fancies, it certainly could not be expected that on an occasion like this he should abstain from indulging both his hearers and himself in an hour's pleasant discourse not entirely confined to the severe dogmas of the schools, or destitute of rhetorical ornamentation. We should like to have been able to lay the entire address before our readers, but neither the author's consent nor our own limits would permit.

The following extracts will give an idea of its spirit and design:

* * * * * "The historian has given to medicine three principal eras or revolutions: the first embraces what may be properly denominated the fabulous period of the healing art, and is, as it were, a reflex of what was developed from its very infancy until the time of Hippocrates; the second unfolds the various reforms instituted by Hippocrates and his successors until the establishment of the school of Montpellier; whilst the third era, or revolution, is occupied with a discussion of the numerous systems or doctrines, which have sprung into existence from the creation of the school of Montpellier down to the times in which we live. It may, indeed, be remarked that these multiplied systems originated, as a general rule, in the admission of some new idea, or the discovery of some new scientific fact, the elaboration of which has introduced into the theory of medicine systems and doctrines not only in direct contradiction, but which have exercised a singularly unhappy influence on healthy scientific progress.

"It may with truth be said that the rude Therapeutics of our profession originated with the first pain experienced by the human family —it was, if you please, Instinct combined with Charity, which gave the first impulse to the Heart in its effort to appease human suffering. You see, therefore, that the eloquent and gifted Tully, in the dark ages of our calling, before the sun of science had made its way above the horizon, characterized it as almost divine in its nature: '*Homines ad Deos in nullâ se proprius accedunt quam salutem hominibus dando;*' and Le Clerc, a French author of no ordinary ability, in his valuable history of medicine, discusses with great cleverness whether the science of the Healing Art did not emanate directly from heaven: '*Si la médecine est venue immédiatement de Dieu.*' Thus it was that the first practical offerings of our science were the direct fruits of that cardinal and sterling virtue—Charity—the essence of which is to do good to one another, and feel for another's woes.

"The ministrations of our profession commenced in the market-places, and on the highways—they were without rules, principles, or methods Soon, however, they assumed another character — they were translated to the Temples. In these Temples certain absurd formulæ were deposited; and so sacred were they deemed, that they were placed under the immediate guardianship of the Gods. This was the starting-point of our profession; it has been called, not without reason, primitive, empirical, or popular medicine. Such, then, was our science in the early days of man; it derived its existence, as it were, from a physical necessity. Just as man was led to clothe himself, build his hut, or prepare his food, so did instinct teach him to seek for remedies in the hour of pain and sickness.

"The second epoch of Medicine was inaugurated by Hippocrates, who, as Celsus justly remarks, was the first to emancipate the profession from the trammels of superstition and the delusions of philosophy. This great man, this sound observer, entitled in all truth to be regarded as the Father of Medicine, was born in the first year of the 80th Olympiad, or between 400 and 500 years before the commencement of the Christian era. His birth-place was the Island of Cos; and it may here be mentioned that this illustrious sage was the cotemporary of Socrates, Herodotus, and Thucydides. Hippocrates was the founder of a school, the cardinal principle of which, like the eternal truths of Heaven, has withstood the whirlwinds of assault, and survived the bitter disputations of the controversialist. He taught that the philosophy of medicine is based on the fundamental dogma that there is in every living being a force, a power, a nature, which is formative, conservative, and healing. What a tribute to truth—what an emphatic demonstration of the profound thought of this great Apostle of our science!

"In accordance with this fundamental principle, Nature exercises, in the affairs of the human economy, a sovereign influence—she presides over the formation of our organs, and directs their functions; she is the recipient of disturbing agents, and she promptly reacts against them. In one word, she determines the progress, development, and termination of diseases by certain pre-established laws, which are peculiar to her. The teachings of Hippocrates were embodied in the principle—*Natura sola medicatrix*—Nature alone cures disease. This is the key-stone of the arch; and when fairly tested by the laws of physiology, pathology, and therapeutics, it will be regarded by all right-thinking men as constituting the only true basis of hope for the restoration of the deranged mechanism to its just and natural equilibrium. The physician, gentlemen, is but the minister of nature. *Medicus curat morbos, natura sanat.* These words define the whole of the healing art—its principles, its tendencies, its objects. Again, this fundamental dogma, thus propounded by the Father of Medicine, is not limited, ephemeral, or partial. On the contrary, based as it is on truth, it will abide the test of the strictest analysis. It is, I repeat, the foundation-stone of our science; it gives direction to thought; it substitutes for vague theory and worthless hypothesis one great, conclusive, irresistible principle. It is this very principle which imparts permanence to our science—it makes it a positive reality, and completely annihilates the absurd argument that medicine is simply a speculative art.

"In alluding to this great dogma of Hippocrates, Baglivi, one of the medical lights of his times, in his first work, published in 1696, entitled, *De praxi medica ad priscam observandi rationem revocanda*, most emphatically exclaims: 'This principle of the Father of Medicine is sound and immutable—its truth will be eternal, because it is the very oracle of Nature herself; nor can it ever be disturbed by the future progress of scientific research.' It must, however, be admitted that many of the disciples of Hippocrates have deviated from the path so plainly pointed out by their illustrious master; they have yielded to the delusions of vanity, and tired, as it were, of the patient and fascinating investigation of the laws of nature, they have, in lieu of these, substituted absurd and fantastic hypotheses, which amount to little more than a mere rope of sand. They have gone further—History, the *litera scripta*, proves beyond a peradventure that they have, by garbled interpolations, falsified the writings of their preceptor, so that, as has been happily said, it is difficult to distinguish between the gold of the teacher and the dross of the scholar. Hence, new systems of medicine were introduced—such as those of the dogmatists, empirics, methodists, eclectics, &c.; these, like all things without an adequate foundation, enjoyed but a transitory existence, and were ultimately forced to yield to the majesty of truth. They prevailed, however, to a greater or less extent, until the time of Galen, who not only vindicated the writings of Hippocrates, and assumed the labor of commenting upon them, and expounding, as no one had yet done, the doctrines of the venerable father of our science.

"Galen, in his views of disease, distinctly tells us—'I surrender myself to the exclusive guidance of nature and Hippocrates.' But the genius of Galen sufficed, only for a short time, to restrain the human mind from indulgence in rampant love for novelties and wild conjecture; and it was not until 1666 that the great Sydenham, the Hippocrates of England, as some of his admirers have called him, published, in his *Methodus curandi febres propriis observationibus superstructus*, a revival of the inductive method of investigating disease, according to the original interpretation of Hippocrates himself. Sydenham, the clear thinker, the sound logician, the ripe observer, in his patient pursuit of medicine, soon detected the fallacy of the doctrines contained in many of the books, and, as a general rule, held in utter contempt the medical writings of his time. It is recorded on the authority of Sir Richard Blackmore, that when the opinion of Sydenham was requested as to the best authors to be referred to for the purpose of acquiring a just knowledge of practice, he told the inquirer '*to read Don Quixote*.' This was, indeed, a withering commentary on the existing state of our science, and a graphic portraiture of the melancholy results growing out of a departure from the fundamental basis, on which alone that science can securely stand. How truthful is the following language of Sydenham, and how significant of the thoroughness of his conviction: 'I am satisfied,' he observes, 'that were I to wander into the most devious tracks, untrodden by mortal step before, I should not, while following the guidance of nature, stray widely from the proper course.'

"The capacious mind and extraordinary genius of the sage of Cos have done more than give us a great principle—he labored most zealously, and with good effect, not only to liberate medicine from the absurd and mischievous heresies with which it had become entangled, and to establish it on an impregnable basis, so that, in accordance with his own expressed wish, it might be shown to be a strictly philosophical science; but he also inaugurated a new era by his successful demolition of the false and dangerous theory, that disease was of celestial origin. A doctrine more deceptive and ruinous to the true interests of science and the wants of humanity can scarcely be conceived—its inevitable tendency being to paralyze all effort on the part of the physician, and confide the cure of disease to charms and incantations—a practice which would necessarily bring into merited contempt both religion and medicine.

"It is, I hold, with the diseases of our physical system, as it is with the derelictions of our moral nature. Providence—a much abused term—has given us a mechanism perfect in all its parts—at once a demonstration of his beneficence, of his unearthly power and wisdom. But the mechanism, to maintain its integrity, is required to act in obedience to certain prescribed laws—and the penalty for the violation of these laws, all experience proves to be disease and suffering. So is it with the moral offences of man—God has made him a thinking being—he alone of all his creatures enjoys the priceless attribute, ratiocination—his very nature makes him a responsible agent, and when he errs, the fault is his; and yet I have read, and so have you, the most extraordinary verdicts in certain cases of sudden death. The inebriate, for example, with his intellect more than clouded, his reason for the time being dethroned, thus depriving himself, by his own folly, of the very means with which Heaven has provided him for self-preservation, walks into the river, and dies the death of the moral suicide! His body is found—an inquest is held—and the verdict is written—*Death by the visitation of Providence!* I cannot myself conceive of a greater wrong than this—it is imputing to the Creator the moral dereliction of the creature! Disease, then, gentlemen, is not derived from Heaven—in the language of Hippocrates—*it is not of celestial origin.*"

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An allusion to the Professor's own particular department led to the following just and feeling tribute to woman:

"While my colleagues in this institution will instruct you in their respective departments, the agreeable duty will devolve on me of directing your attention to the sufferings and dangers to which gentle woman is exposed during the most interesting period of her existence. How proud and honored are the reminiscences which woman naturally brings to our mind; memory loves to dwell on them, for they are the very embodiment of our happiest days. Who can think of maternal love and not have his heart filled with gratitude and veneration for the devoted and self-sacrificing mother, who watched with such unwavering fidelity over his infancy, and whose constant prayer to Heaven in her nightly vigils, was—*Oh, God! Protect my child!* As the ivy fastens itself to the oak, so should the child entwine itself around the bosom of its mother; there should be but one heart between them, and every throb of that heart should be for the happiness and protection of the parent, and the honor and happiness of the child.

"Woman, from her infancy to old age, is an object of constant interest, and it is not strange that a being so tender, and so full of endearments, should have called forth the admiration of the philosopher and the fervid praises of the poet. Her history is but the narrative of good deeds. In health, she is our pride; in disease, our solace; and, in the faithful discharge of her duties to society, she is the idol of all hearts. Like a ministering angel, she soothes us in affliction, and, under the depressing influences of adversity, she inspires hope, and incites to renewed effort. Who has not felt the cheering influence of her smiles, and the encouragements of her eloquence, in the dark hour of despondency? Abandoned by friends, and left to the cold charities of a selfish and heartless world, the husband of her bosom then knows how to appreciate the depths of her love and the sincerity of her vows:

"There, drink my tears while yet they fall;
Would that my bosom's blood were balm,
And well thou know'st, I'd shed it all
To give thy brow one moment's calm.
Nay, turn not from me that dear face,
Am I not thine—thy own loved bride,
The one, the chosen one, whose place,
In life or death, is by thy side?"

"Is it, therefore, not due to this self-sacrificing being that we, who know so well how to value her excellence, should labor assiduously to diminish the sufferings and assuage the sorrows incident to her sex? The duty of instructing you how to assuage these sorrows and rescue her from the perils by which she is surrounded is imposed on me, and I need not say that I shall endeavor most faithfully to perform this office. These sufferings and sorrows, if faithfully depicted, cannot fail to excite your sympathies, and, by eliciting the generous and noble impulses of your nature, urge you to an earnest and conscientious prosecution of your studies."

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The applause which greeted the allusion which we give below to the present unhappy state of our country, indicated the generous spirit which still animates the Northern breast in regard to the deluded insurrectionists of the South. We wish that we could share the Professor's confident anticipation of the gracious reception which an expression of such a feeling on our part would meet with on the other side, but we must confess we are not so hopeful.

"Connected as I have been with this University from its very foundation, and laboring as I have done most zealously, and I sincerely trust not without some effect, for its honor and reputation, both at home and abroad, I have not the moral power to repress the feelings which crowd upon me at this moment. The days of the past are, as it were, but the records of history—if you turn to these crowded benches you will look in vain for your brothers of the South, who, in such unbroken numbers, were in the yearly habit of seeking instruction in these halls. It is true that a portion of Virginia, Maryland, Mississippi, Missouri, and good old Kentucky, are represented; but where are our friends from North Carolina, South Carolina, Georgia, Alabama, Tennessee, Louisiana? The answer to this inquiry throws a pall over my heart! Oh! the times have sadly changed—this great country of ours, which we all so dearly love, and which, in its integrity, has been the admiration of the civilized world, is now torn by internal dissensions—her interests are divided—and the *Stripes* and *Stars*, which have always led our brave troops to victory, and which, wherever seen, whether at home or abroad, have never failed to evoke the patriot's prayer—these *Stars* and *Stripes* now float but over a portion of our country. They, with that proud bird, the American eagle, are no longer the common emblem of one great united people. We have forgotten the counsels of our patriot fathers; we have ignored the history of our independence; we have lost sight of the great fact that the blood of the South, and the North, and the East, and the West, was freely shed for the achievement of our liberties. The only rivalry at that period between the North and South was, which of these two geographical sections should give most of its life's current for the repulse of the common enemy and the protection of our national independence. Invoke the memories of Lexington, Bunker Hill, Fort Moultrie, Trenton, Princeton, Brandywine, Germantown, Stony Point, Camden, Yorktown—and they will bring back to our recollection the vivid and stirring scenes of those days; they will tell how our fathers marched in solid array to meet the enemy, and secure for their children the most precious inheritance which has ever been transmitted from father to son—the *American Union.* Our people were then brothers, with one country, one hope, one destiny; but now, alas! the family ties have been rent asunder; we are arrayed one against the other in deadly strife, and this fair land has been more than crimsoned with a brother's blood! Oh! may it please Heaven to throw the mantle of its protection over this once happy country—and may we be spared further the greatest curse that can befall a nation—civil war. May our Government, through wise counsels and patriotic impulses, with the olive-branch in one hand and the Stars and Stripes in the other, by prompt and just compromises, founded upon the American Constitution, make us once again a great united people. Politicians are without hearts—their revel-feast is excitement and self-aggrandizement, and no sacrifice is too heavy if their object can be attained. I believe, in my conscience, they would as willingly destroy the *Magna Charta* of our liberties, if necessary to their selfish purposes, as they would quietly sit down to their daily repast. The great heart of the American people, North, South, East, and West, beats for peace and the restoration of the Union. The people, in their sovereign majesty, will demand these issues—blood enough has been shed—the nation has been made desolate, our fire-sides hung in mourning, and the very heart-strings of affection broken.

"Is there no hand among us to pour the balm of Gilead into the wounds of our bleeding country? No voice, which, in tones of kindness and fraternal love, will say to our erring countrymen—Brothers! in a moment of frenzy you have struck at the heart of your mother—but she, true to the instincts of a devoted parent, asks you to repent, and return once again to her embraces! Language like this, it seems to me, would accomplish much; it would not only bring back the sober thoughts of our Southern brethren, but it would kindle anew the reminiscences of our early history. Their love for the old flag and its associations—the recollection of our early struggle and the glories which followed it—the contemplation of the beauties of this great Republic before rude hands were raised for its destruction—all these things would burst upon them as a dream; they would soon realize the delusion and wild impulse under which they had acted, and thus gladly return to the old household. May the sacred ashes which repose on the banks of the Potomac, under the venerated shades of Mount Vernon, remind us, both North and South, of our duty, and so impress us with the lofty patriotism of the Father of his Country, as to make us resolve that not one solitary stone of the arch, which gives support to the national fabric, shall be loosened from its foundations—not one star dimmed nor one stripe removed from that glorious banner, which has never yet gone down in dishonor in any equal contest with a foreign foe!"

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"The profession which you have adopted is one of peace and kindness—its emblems are benevolence and good-will—its purposes all that enlightened philanthropy will at once recognize as entitled to the best consideration of man; its pride is not in the desolations of war, nor in the sanguinary deeds of senseless ambition; and yet the battle-field itself is filled with the records of its glory and its triumphs; not triumphs over a fallen foe, but triumphs over disease and death. There is, it is true, nothing dazzling in the practical and every-day duties of the medical practitioner; how strikingly, for example, do his ministrations contrast with the *éclat* of the forum, or the proud bearing of the warrior, who, stimulated by love of country, pushes on the enemy, and makes by his deeds of daring the field of carnage still more frightful, covered, as it already is, with the slain and the wounded. Amid the shouts of victory, and the wild booming of the deadly cannon, the physician is occupied in a more humble, but not less glorious, work. He, like the good Samaritan, in all this glitter of arms and thirst for blood, is seeking for the sick and dying. He forgets the noise and tumult of the scene; regardless of all personal danger, he devotes himself faithfully, and with true Christian heroism, to the performance of his humane duties. Here he amputates a limb, there he dresses a wound; here, again, he slakes the thirst of the dying soldier, and, peradventure, lets him die as a brave soldier loves to die—amid the folds of his flag!

"Ours is a glorious profession, for it is one of glorious deeds; it is a pursuit of self-sacrifice, for it is one of constant peril. When pestilence sweeps the land, and blanches the cheek of many a stout frame, the physician is in the midst of incessant vigils; and if, as it often happens, he fall in the performance of duty, it may be that the only flowers which spring from his grave are those which have been watered by the tears of his widow and orphan children!"

The discourse of Prof. Joseph M. Smith, at the Twenty-third Street School, was a comprehensive view of the entire subject of Hygiene, its uses and its abuses, our knowledge of it and our ignorance of it, its relations to men in masses and to men as individuals, in the town-house and in the country-house, in the mansion and in the hovel, in the church and in the tent. The measure which it urged—namely, the establishment of a chair of hygiene in our medical colleges, and the principle therein involved of making medicine, as far as in us lies, a preventive rather than a remedial art—is one most deserving of attention, and we trust that the Trustees of his own college will not allow the hints of the Professor to fall unheeded. As it is probable that the address will be printed entire, we abstain from giving any quotations from it.

New York Ophthalmic School.—Dr. Mark Stephenson delivered the Introductory to his *Eleventh* Course of Lectures on the Eye, its anatomy, pathology, operations, treatment, &c., at the New York Ophthalmic Hospital, corner of Fourth Avenue and Twenty-eighth Street, on the 24th ultimo, to a large and appreciative audience, composed of physicians and medical students from the different medical colleges in the city.

After welcoming one and all of the medical pupils to the New York Ophthalmic Hospital, he stated that the Institution was never in a more prosperous condition than at the present time, averaging 1,000 patients per annum, and numbering over 300 graduates since its organization. He next proceeded to the discussion of the qualifications required to constitute a scientific and skillful Ophthalmic Surgeon.

Ambulance Corps.—As the attention of the public has been directed lately to this subject, and the idea has obtained that there is no regularly organized system for the control and management of ambulances, we publish the following General Order, issued early in August. The order was prepared by Surgeon Jonathan Letterman, U. S. A., Medical Director Army of the Potomac. Its operation has been so satisfactory that, with a few slight alterations, it has the approbation of the officers who have had the opportunity of experiencing its advantages. It is right that Dr. Letterman's plan should be properly accredited.

AMBULANCE CORPS, HEAD-QUARTERS, ARMY OF THE
POTOMAC, CAMP NEAR HARRISON'S LANDING, VA.,
Aug. 2, 1862. *General Orders No.* 147.

The following regulations for the organization of the Ambulance Corps, and the management of Ambulance Trains, are published for the information and government of all concerned. Commanders of Army Corps will see that they are carried into effect without delay:

1. Ambulance Corps will be organized on the basis of a Captain to each Army Corps as Commandant of the Ambulance Corps; a 1st Lieutenant for a Division, a 2d Lieutenant for a Brigade, and a Sergeant for each Regiment.

2. The allowance of ambulances and transport carts will be—one transport cart, one four-horse and two two-horse ambulances for a Regiment, one two-horse ambulance for each Battery of Artillery, and two two-horse ambulances for the Head-Quarters of each Army Corps. Each ambulance will be provided with two stretchers.

3. The privates of the Ambulance Corps will consist of two men and a driver to each ambulance, and one driver to each transport cart.

4. The Captain is commander of all the ambulances and transport carts in the Army Corps, under the direction of the Medical Director. He will pay special attention to the condition of the ambulances, horses, harness, &c., requiring daily inspections to be made by the Commanders of Division Ambulances, and reports thereof to be made to him by these officers. He will make a personal inspection once a week of all ambulances, transport carts, horses, harness, &c; whether they have been used for any other purpose than the transportation of the sick and wounded and medical supplies; reports of which will be transmitted through the Medical Director of the Army Corps to the Medical Director of the Army every Sunday morning. He will institute a drill of his corps, instructing his men in the most easy and expeditious method of putting men in and taking them out of the ambulances, taking men from the ground and placing and carrying them

on stretchers, observing that the front man steps off with the left foot, and the rear man with the right, &c. He will be especially careful that the ambulances and transport carts are at all times in order; provided with attendant drivers, horses, &c., and the kegs daily rinsed and filled with fresh water, that he may be able to move at any moment. Previous to, and in time of action, he will receive from the Medical Director of the Army Corps his orders for the distribution of the ambulances, and the points to which he will carry the wounded; using the light, two-horse ambulances for bringing men from the field, and the four-horse ones for carrying those already attended to further to the rear if the Medical Director considers it necessary. He will give his personal attention to the removal of the sick and wounded from the field, and to and from the hospitals; going from point to point to ascertain what may be wanted, and to see that his subordinates (for whose conduct he will be responsible) attend to their duties in taking care of the wounded; treating them with gentleness and care, and removing them as quickly as possible to the places pointed out, and that the ambulances reach their destination. He will make a full and detailed report after every action, of the operations of the Ambulance Corps.

5. The 1st Lieutenant assigned to the Ambulance Corps of a Division, will have complete control, under the Commander of the whole Corps and the Medical Director, of all the ambulances, transport carts, ambulance horses, &c., in the Division. He will be Acting Assistant Quartermaster for the Division Ambulance Corps, and will receipt and be responsible for the property belonging to it, and be held responsible for any deficiency in ambulances, transport carts, horses, harness, &c., pertaining to the Ambulance Corps of the Division. He will have a traveling cavalry forge, a blacksmith, and a saddler, who will be under his orders, to enable him to keep his train in order. He will receive a daily inspection report of all the ambulances, horses, &c., under his charge, from the officer in charge of Brigade Ambulance Corps; will see that the subordinates attend strictly to their duties at all times, and will inspect the corps under his charge once a week; a report of which inspection he will transmit to the Commander of the Ambulance Corps.

6. The 2d Lieutenant in command of the ambulances of a Brigade will be under the immediate orders of the Commander of the Ambulance Corps for the Division, and have superintendence of the Ambulance Corps for the Brigade.

7. The Sergeant in charge of the Ambulance Corps for a Regiment

will conduct the drills, inspections, &c., under the orders of the Commander of the Brigade Ambulance Corps, and will be particular in enforcing rigidly all orders he may receive from his superior officers. The officers and non-commissioned officers of this corps will be mounted.

8. The detail for this corps will be made with care by commanders of Army Corps, and no officer or man will be selected for this duty except those known to be active and efficient; and no man will be relieved except by orders from these Head-Quarters. Should any officer or man, detailed for this duty, be found not fitted for it, representations of the fact will be made by the Medical Director of the Army Corps to the Medical Director of this Army.

9. Two medical officers from the reserve corps of surgeons of each division, and a hospital steward, who will be with the medicine wagon, will be detailed by the Medical Director of the Army Corps, to accompany the ambulance train when on the march, the train of each division being kept together, and will see that the sick and wounded are properly attended to. A medicine wagon will accompany each train.

10. The officers connected with the corps must be with the trains on a march, observing that no one rides in the ambulances without the authority of the medical officers, except in urgent cases; but men must not be allowed to suffer, and the officers will, when the medical officers cannot be found, use a sound discretion in this matter, and be especially careful that the men and drivers are in their proper places. The place for the ambulances is in front of all wagon trains.

11. When in camp the ambulances, transport carts, and Ambulance Corps will be parked with the Brigade, under the supervision of the Commander of the Corps for the Brigade. They will be used on the requisition of the regimental medical officers, transmitted to the Commander of the Brigade Ambulance Corps, for transporting the sick to various points and procuring medical supplies, and *for nothing else.* The non-commissioned officer in charge will always accompany the ambulances or transport carts when on this or any other duty, and he will be held responsible that they are used for none other than their legitimate purposes. Should any officer infringe upon this order regarding the uses of ambulances, &c., he will be reported by the officer or non-commissioned officer in charge to the commander of the train, all particulars being given.

12. The officer in charge of the train will at once remove anything not legitimate, and if there be not room for it in the baggage wagons of the regiment, will leave it on the road. Any attempt by a superior

officer to prevent him from doing his duty in this or any other instance, he will promptly report to the Medical Director of the Army Corps, who will lay the matter before the commander of that corps. The latter will, at the earliest possible moment, place the officer offending in arrest for trial for disobedience of orders.

13. Good, serviceable horses will be used for the ambulances and transport carts, and will not be taken for any other purpose except by orders from the Head-Quarters.

14. The uniform of this corps is—for privates—a green band two inches broad around the cap, a green half chevron two inches broad on each arm above the elbow, and to be armed with revolvers.

Non-commissioned officers to wear the same band around the cap as a private, chevrons two inches broad, and green, with the point towards the shoulder, on each arm, above the elbow.

15. No person will be allowed to carry from the field any wounded or sick—except this corps.

16. The Commanders of the Ambulance Corps, on being detailed, will report without delay to the Medical Director, at these Head-quarters, for instructions. All Division, Brigade, or Regimental Quartermasters having any ambulances, transport carts, ambulance horses, or harness, &c., in their possession, will turn them in at once to the Commander of the Division Ambulance Corps.

By command of
Major-General McClellan.

S. Williams, Assistant Adjutant-General.

— We select the following description of the Springs of Vichy from one of Prof. Charles A. Lee's interesting letters to the *American Medical Times:*

"There is no country in the world where mineral waters are held in higher estimation than in France. This is shown by the fact, that the preservation and management of all the important mineral springs are under the direct control of the government, and form a distinct bureau under the minister of agriculture, commerce, and public works. They are now under the immediate charge of M. Nanta, Chief of the Division of Mines and Manufactories. He is aided by a *Consulting Hygienic Committee* consisting of nine members, of which M. Rayer, Dean of the Faculty of Medicine and Physician in ordinary to the Emperor, is president. Thirteen other physicians of eminence are designated by government to aid in the deliberations and consultations relating to mineral waters; and their names are annually published in connection with the other officers of State. Besides this, the *Im-*

perial Academy of Medicine has a permanent standing committee on mineral waters, consisting of six of its most distinguished members, besides a leading chemist. Besides these, there is an *Army Council of Health* under the minister of war, who have a voice also in regard to the use of mineral waters ; of this, M. Vallant is President and Medical Inspector.

"There are, in all France, one hundred and sixty-five mineral springs of greater or less celebrity; the most important of which, already stated, belong to and are controlled by the Government.

"Vichy may undoubtedly be placed at the head of these, if we consider the reputation it enjoys, and the number of invalids who annually resort hither to make trial of its waters. The Emperor may be said to have taken it under his especial patronage, as the Empress has that of *Eaux-Bonnes*, for he occasionally takes up his residence at Vichy in July, and protracts his stay till late in August, or rather, till the great national fête of the 16th of the month. It is well known that he has been somewhat of an invalid for several years past, and it is generally believed that he finds the use of the waters extremely beneficial. Some idea may be formed of the popularity of the waters, when I state, that up to the 15th of September, 1861, 16,440 strangers had visited the place, and up to the 20th of August of the present year, 15,483 patients had registered their names, besides 1,324 servants who accompanied them. These, as the register shows, came from every country in Europe, and a considerable number from North and South America, and the West Indies. There can be no doubt that some fashionables are attracted hither by the presence of the Emperor, but the vast majority to try the medicinal effects of the waters.

"There is nothing attractive in the appearance or situation of Vichy; it is a hot, dusty place, far more so than our Saratoga, while its surroundings are far less agreeable. It consists of the old and new town ; the streets of the former narrow and irregular, while the houses are mean and ugly; but the new portion is better laid out, though still without much order or regularity, the houses being built of the same light-colored sandstone which is universally used all over France. It lies on the left bank of the Allier, a moderate-sized river, in summer occupying a tenth part of its ordinary channel; nine hours by express train from Paris, on the Orleans line of railway. There are numerous *grand* hotels; everything is grand in France; even the principal spring here goes under the name of *Grande-Grille!* The price of board, including rooms and the use of the salon, is from one to three dollars or more per day, according to extent of accommodations. A patient, however, as at our own watering-places, can adapt his expenses to his means. All the hotels have a *table d'hôte*, but the patient can resort to a restaurant, and thus live at less than half the expense. There are some establishments chiefly patronized by the fashionable, who resort hither for gambling or amusement, such as the hotels Guillermin, de Paris, Germot, &c. Lodgings generally have to be secured in advance; one-half the residents seem to be in the confectionery line, for their shops are filled with pastilles and sugar plums, made with Vichy salts, sugar, and flour, or gum and '*sucre d'ogre*,' a 'digestif alcalin,' very much in vogue.

"The springs, nine in number, were first taken possession of by Napoleon I. in 1810, who opened a park, and authorized the acquisition of the necessary land. The large establishment was erected in 1820, but it was not till 1845 that the government took entire control of the waters. The second thermal building was erected in 1858. These are large and commodious, and display considerable architectural taste. There are 306 bath rooms, and 39 separate rooms for *douche* baths, which seem to be greatly in vogue. In 1853, the government sold 100,520 bath tickets, and sent out 361,000 bottles of the water. In 1857, 170,405 tickets were given out, including 27,000 gratuitous, and 700,000 bottles of water sold; in 1861, 280,000 bath tickets sold, and 1,250,000 bottles of water sent out and sold, and all this in addition to the immense quantity of the dry salts, extracted from the waters, and the *pastilles*, made for the government from the same salts, and distributed over the kingdom. Thus it will appear that these mineral waters are a source of no small revenue to the government, and are annually becoming more and more profitable. The presence of the Emperor and the increasing pecuniary value of the waters has given quite a spur to improvements recently; manifested by the formation of a new park and ornamental grounds on the banks of the Allier, the construction of a new suspension bridge, the exterior of the railroad from St. Germain des Trosses to Vichy, and the erection of many handsome seats and villas in the neighborhood. I visited the large establishment for extraction of the natural salts, which is in charge of a special agent appointed by government, and every precaution is taken to prevent fraud by adulteration or substitution, and the same of the water sent out in bottles. So extensive is this distribution, that there is scarcely any part of the world where the natural Vichy water, or its salts, cannot be had. The remedial properties must be reserved for my next letter."

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LECTURES, MONOGRAPHS AND CASES.

On the Pathological Basis of the Treatment of Joint Diseases. By HENRY G. DAVIS., M.D.

(Read before the New York Academy of Medicine.)

For many years my attention has been directed to the treatment of diseases of the joints, and I have been led gradually to adopt views differing materially from those generally received by the profession, in relation to the causes operating to destroy, not only the cartilages, but the bones upon which they rest.

This difference of opinion has produced a corresponding change of treatment of the diseases in and about the joints; and I might say that no further evidence is required of the correctness of the theory, than that afforded by the success of the treatment based upon it.

In investigating this subject, it has been difficult to procure from books direct evidence upon the point which it will be my endeavor to establish, for the reason, that those who have examined and reported cases, have not so recorded their observations as to give the desired information. Not recognizing the causes which are assigned in this paper as operating to produce the lesions discovered, they have given but a partial narration of the facts their examination would have revealed, had their attention been directed to the point under consideration.

To illustrate, cases of fracture of the neck of the femur are reported, that had been under treatment by the straight splint for months.

In the *post-mortem* reports, the state of all the articulations below that of the fracture are detailed, while that of the hip, the seat of the injury, is omitted.

Had the condition of the hip-joint been given in every instance of fracture of the neck of the femur treated by the straight splint, and the result of dissection recorded, together with the description of the other articulations of the injured limb, the array of facts would have been abundant. As it is, I have obtained two cases from the books, in which all the facts having a bearing upon my theory are fully detailed; facts that quite conclusively support the views I shall advance as accounting for the phenomena witnessed.

There are, however, a sufficient number of cases in point, in which the facts (so far as related) correspond with the two mentioned. In adition, several surgeons have kindly supplied me with further testimony, derived from their own observations; and what is gratifying, as well as encouraging, to an investigator in a new field, they have been disposed to acknowledge the correctness of the conclusions to which the facts have led me.

During the course of inflammatory processes in and about the joints, after they have advanced to a certain point, the joint becomes in a measure fixed, and not unfrequently so much so, as to resemble true anchylosis. The time necessary to produce this result varies according to the character of the structure inflamed.

Nature appears to establish this immobility of the parts as a remedial measure, and, so far, it is safe to follow her guidance. In order to do this understandingly, however, let us inquire what is her aim and intention in thus rendering the joint immovable. It undoubtedly is to protect the surfaces of the joint, (that come in contact in the natural movements of the limbs,) when diseased, from friction. The pain which friction causes prompts the sufferer to second this intention of nature by his voluntary efforts. So far as this object can be accomplished by the muscles holding the joint motionless, they so act. Now, in effecting this immobility, are the muscles of the diseased joints relaxed, and therefore at rest; or, are they in a semi-contracted state, and thus fix the joint by acting equally upon every side of it? It would appear, from some facts I shall adduce, that the latter is their condition.

In inflammation in and about joints, when it has advanced to a degree that renders motion painful, if any attempt is made to flex or extend the limb, the motion is communicated to the part beyond, in a similar manner as when the joint is anchylosed.

This immobility in some cases may be in part produced by the tumefaction accompanying the inflammatory process; but tumefaction is not necessary to the result, for in the very cases of chronic morbus coxarius where no swelling exists, the immobility is most marked. Anæsthesia has been produced in these cases without relieving the fixed state of the joints; yet that there was not true anchylosis, was proved by the perfect freedom of motion after a few days of treatment by elastic extension.

Again, in a limb with disease of the hip-joint that has been under treatment until it will admit of flexion and extension readily if moved gently, yet if handled a little roughly, all the muscles will be upon their guard, and the pelvis will be found following every motion of the femur.

If it is true that the diseased joint is held in a fixed position by a certain rigidity of the muscles passing to or beyond it, an amount of pressure corresponding to the contractile force of the muscles, as then exerted, must be produced upon the articulating surfaces of the joint. The inquiry may be made—Does not the joint in health sustain a much greater amount of pressure with impunity? To answer this question, let us examine a particular point in the mechanism of certain joints, of which the knee furnishes an example. The lower portion of the femur terminates in two condyles, each of which presents an articular surface, narrower, but at the same time more extensive, antero-posteriorly than the corresponding articular surface of the head of the tibia. Not the whole, therefore, but only a part of the articular surface of the condyle can be in contact with that of the tibia at any moment; and the precise portion in contact varies with every variation of flexion and extension of the knee-joint; this will be evident, when we consider that the concave surface of the head of the tibia and the convexity of the condyles of the femur do not correspond. When the limb is in exercise, or when its position can be frequently changed, no difficulty arises from the contact and pressure, because then the point of pressure is constantly changing, and when not in exercise, its position is altered whenever any inconvenience is experienced. In health, therefore, the pressure is never exerted upon any one point for a great length of time continuously, but is ever changing from one part of the whole surface to the other.

It is for this reason that a joint in health can suffer the weight of the body to rest upon it without injury; but when the parts are fixated by disease or artificially, the pressure, whether it be a portion of the weight of the body, or only the contractile power of the muscles, (as exerted in fixing the joint,) falls entirely upon a small portion of each condyle, and a corresponding portion of the head of the tibia in contact with it. If it is admitted that only a small portion of the articular surfaces of the condyles and the tibia are in contact at any given time, in the normal condition, we are prepared for the inquiry, What will be the result of continual pressure, effected by the contractile force of the muscles while fixing the joint; a compression from which there may be no relief for weeks or months in succession?

The effect of continued, unremitting pressure upon other portions of the body is well understood.

Every practitioner cautions his pupils not to allow the heel to rest upon the bed while treating a case of fracture of the lower limb, warning him that, if he does so, the parts will slough; this result takes place, not because of the *severity* of the pressure, but from its *persistency;* from its not allowing, by change of position, the circulation, and consequently nutrition, to proceed uninterruptedly. The liability to this casualty increases the less sensibility there resides in the structure affected. It is also promoted by diminished vitality. We can hence easily understand why it so readily takes place in the heel. I would call attention to this fact, as I shall have occasion to notice the importance of its consideration when applied to the effect of pressure upon cartilages.

There are two reasons why diminished sensibility and nutritive endowment should render parts liable to destruction by pressure. First, the sensibility being slight, death of the parts occurs with very little suffering. Secondly, the vitality being low, less pressure is required to interrupt the vital functions, and thus cause death.

I trust that I shall be able to show conclusively, that in inflammations external to the capsules of the joints, sufficient to render them motionless, absorption, if not death, results to those portions of articular cartilage in contact and pressing upon each other; that this occurs when the external disease has not extended to the articular surfaces, and that it is owing chiefly, if not entirely, to continued pressure; this pressure being limited to that portion of the articulating surfaces that are held in contact for a period of time, without intermission or change, by the muscles which control the motions of the joint affecting the parts, precisely as pressure does when applied to the surface of the body, viz., producing absorption, when not sufficient entirely to arrest the nutrition of the parts, and when going beyond this point, death, with exfoliation of the parts pressed upon. For *this is precisely the result* we find in joints rendered immovable by artificial means. If this result follows from pressure in a previously healthy articulation, how much more destructive must be the process in a joint whose vitality is depressed by disease!

This view renders intelligible the *modus operandi* by which cartilages and bones, in some instances, are so rapidly destroyed. This result to cartilages from pressure is rendered more readily admissible when we consider the manner in which they are nourished. Cartilages are without blood-vessels and nerves of their own; those of the surrounding parts terminate at their surfaces; those of the synovial membrane at its junction with the edge of the cartilage; those of the bone at its point of union with the cartilage. It is not necessary for my purpose to show the precise way in which cartilage is formed, only that it is possessed of a low grade of vitality. In respect to its mode of nutrition, the cartilage resembles the cornea; and, as the effect of imperfect nutrition upon this portion of the eye has been fully established, I would direct attention to this point to illustrate the influence of like causes upon the cartilages. The justness of the comparison will be admitted if we keep in mind the similarity of their modes of receiving their nutritive supply. In experiments instituted by physiologists upon the inferior animals, it was shown that the cornea was readily affected with ulceration, when they were fed upon certain articles of food that did not furnish them with proper nourishment. I mention this fact to show how easily parts which are not supplied with blood-vessels take on the *ulcerative process.* In the case of the cartilage, the cause is mechanical which interferes with nutrition, but the result to the parts immediately acted upon is the same, viz.: deficient or interrupted nutrition by reason of uninterrupted pressure. That this result follows, is proved by the anatomical fact that the centre of the ulceration is always at the point of greatest pressure, as revealed on dissection in the cases presently to be cited.

There is yet another reason, founded upon the structure of a joint, why continued pressure with immobility should be attended with danger. The cartilage being an elastic substance, and affixed to the ends of two bones whose surfaces do not precisely correspond with each other, the greatest amount of pressure must come upon the centre of those portions in contact, gradually diminishing to the circumference; in this respect they are unlike two solid bodies, where the pressure would be equal upon all the parts in contact. The difficulty that would arise from this construction of the parts in a small articulating surface like the hip-joint, where it is subject to great pressure, is somewhat obviated in this joint by a thickening of the cartilage around the upper surface of the acetabulum, in the form of a ring, which admits the extreme upper portion of the head of the femur to pass into it; thus presenting a larger surface to receive the pressure than would have existed had the cartilage been of an equal thickness throughout.

When a joint or limb is rendered immovable, its functional law is violated, and a corresponding penalty incurred, viz.: that following the loss of its accustomed exercise. A part suffers from this cause in proportion as its normal condition is one of greater or less motion; the joints and muscles must therefore suffer more in proportion than any other part of the body. This effect of rest has been noticed by authors as manifesting itself by ecchymosed spots upon a limb, as well as in a joint, rendered immobile; while its fellow, not kept motionless, was not so affected. Rest alone might not be sufficient to produce, in a particular case, very deleterious effects; but when we add to it continued pressure, and that, perhaps, applied to parts already somewhat enfeebled, we have influences that are potent for evil—influences that have wrought the destruction of many limbs, if not lives.

The first case that I shall give in support of the views I have presented is one reported by Dr. South, in his translation of Chelius' System of Surgery, as coming under his own observation.

"J. S., aged 25 years, a baker, came under my care in the year 1843. Three months after having typhus fever, four and a half years since, his right knee became weak, and he began to limp. At this time there was not any swelling of the joint; but during the following six months the knee swelled, and he was under medical treatment; an abscess formed below the knee-cap, and burst, subsequently, by two wounds below, and on the inside of the tubercle of the shin-bone. A discharge continued for four or five months; during which time he followed his business, and walked about a great deal. The wounds at last healed, but soon after swelling occurred below and around the knee-cap, and thirteen months since it suppurated, and continued discharging on the apex of the knee-cap till the beginning of April in this year. During the whole of this time he has walked, though not without pain, but has been unable to follow his business. The discharge having ceased, general swelling of the whole knee commenced, and he began to feel weakness on the sides of the joint. Being again crippled, he came into the hospital."

His condition grew worse, until his life was endangered. The doctor resolved to puncture, with a view to anchylosis.

"Aug. 19, 1843, made a puncture with an abscess lancet on the outside of the base of the knee-cap, where the skin was thinnest; blood and synovial fluid flowed out; the patient failed, and amputation was resorted to, saving the patient." "On examining the joint,'' he says, "the whole of the synovial membrane lining the capsular and extending over the other ligaments of the joint was found covered with a vascular, thick, soft, and granular substance.

"The cartilage on the *edge* of the patella was partially absorbed, as also that on the left articular cavity of the head of the tibia, in a semicircular form, and on both condyles of the femur it was partially removed; these corresponded to the granular substance on the synovial membrane, and a groove on the cartilage of the internal condyle answered to a remarkable slip of the granular substance, which crossed between and connected the capsular and crucial ligaments. There was not any pus in the joint."

The history of this case (most of the details of which I have omitted, because of its length,) corresponds quite perfectly with that of ordinary cases of morbus coxarius. The same pains, upon motion, the nocturnal exacerbations, the constitutional irritation, &c., &c.; it differs from the latter, however, in the entire absence of pus.

In this case we find the greatest amount of destruction of the cartilage precisely at those points exposed to constant pressure; the edges of the patella, the surface of the condyles, and the corresponding surfaces of the tibia, are the parts that suffered.

Have we, in this case, any disorganization within the capsule that might not have been effected by continued pressure and immobility, producing absorption of the cartilage, and a changed synovia in consequence? The condition of joints, where simple rest has been produced artificially, will throw some light upon this point.

Bonnet, in a work published in 1845,* gives the result of observations made by himself and Teissier, on the effects of prolonged immobility upon joints. He says, "I am about to demonstrate, anatomically, that long-continued immobility can produce severe diseases in the healthy joints." And then goes on to give the following results:

"1st. Effusion of blood and of serum in the articular cavities.

"2d. Injection of the synovial membranes, and the formation of false membranes.

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* *Traité des Maladies des Articulations*, accompagné d'un Atlas avec 16 Planches, par A. BONNET, Professeur, etc. Paris et Lyon: 1845. Tome 1re, f. 9, et conseq.

"3d. Alteration of the cartilages.

"4th. Anchylosis."

He says, "I have not mentioned stiffness of the joints among the anatomical lesions which their immobility produces. This stiffness is frequently observed, and ought to be particularly considered as an effect of the alterations which the autopsy reveals in the cartilages and in the synovial membranes." He speaks of a local scorbutic affection, mentioned by some authors as produced by immobility. They have frequently noticed, he says, violet spots appearing upon immovable limbs. He gives M. Teissier credit for having first noted this effect of immobility upon the joints. The latter says, "I have almost invariably found in all the articular cavities of the diseased limb, even in those most remote from the solution of continuity, the secretion of synovia replaced by bloody serum, and even by liquid blood, almost without admixture. In one case, and one only, I have found clots of blood. This was in an old man, confined for six months for fracture of the neck of the femur."

Teissier says, also, that he has twice had occasion to observe considerable hydrarthrus of the knee, in two cases of fracture of the lower limb, in persons previously perfectly healthy. Under the second head, Bonnet writes, that in connection with effusions he should mention injection of the synovial membranes. M. Teissier, he says, has observed it in every case, without exception, which he has examined; that it exists particularly in those folds which the synovial membranes present normally, and which have a broken appearance. These folds become red and inflamed. "Sanguineous effusion and injection of the synovial membranes are the two first degrees of the effects produced by immobility.

"They are always found where the joints are materially altered, and are never wanting where false membranes exist. These last are observed but rarely as a consequence of immobility. In all the cases in which M. Teissier observed them, they were already supplied with vessels, and adhered to the cartilaginous surfaces.

"Their existence appeared to demonstrate that long-continued repose can produce in the joints lesions of an inflammatory nature." As to the third effect mentioned—viz., the alteration of the cartilages—he affirms, with Teissier, that "continued repose can produce serious alterations of the cartilages—such as redness, swelling, softening, erosion, and wasting away. The redness which is observed on the cartilages after immobility may be uniform or punctate. Where the cartilages are not eroded, it presents itself under the form of ecchymosis more or less deep. On the contrary, where the cartilages are ulcerated, it is unequal, dotted."

In speaking of ulceration of the cartilages, he says that it proceeds from the free surface to the adhering surface.

"*Observation* 1*st.*—A man, 60 years old, entered the Hôtel Dieu of Lyons with oblique fracture of the middle of the femur. The limb was placed in Boyer's splint, and permanent extension made. After three months' treatment, the patient contracted diarrhœa, and died without having experienced any pain in the joint of the fractured limb.

"*Autopsy.*—The bones of the fracture are blunt and rounded, without the least trace of agglutination. A bundle of muscular fibres separates the ends of the bones. The soft parts are infiltrated with blood to a great extent, but do not present any sign of inflammation. The knee of the affected side contains a great quantity of effused blood. The cartilage of the internal articular fossa of the tibia, upon the posterior side, is destroyed to half its depth, in a circular form, having a diameter of one centimeter.

"The loss of substance is upon the free side, the depth unequal, and the circumference injected for some lines.

"The portion of cartilage, of the internal condyle of the femur, contiguous to the erosion, of which we have just spoken, is affected in all its thickness by a loss of substance, similar in its aspect and dimensions. The cartilage of the external articular fossa of the tibia is ulcerated behind in an irregular space, being about two centimeters in length. The loss of substance is of little depth, and unequal; the contexture of cartilage which supports this erosion is evidently softened and swollen; the other portions of the cartilage present an injected appearance, of a lively, uniform red. A similar redness is observed in the cartilage of the external condyle of the femur, in the whole extent corresponding to this last loss of substance. The diseased cartilages are detached from the bones with the greatest ease, but the femur has not undergone any alteration.

"The tibio-tarsal joint, notwithstanding its distance from the fracture, also presents an effusion of blood, a yellowish tint of the cartilages, which are also deprived of their polish, and an injection with tumefaction of the synovial membrane, which forms a fold between the tibia and the fibula."

"*Observation* 2*nd*, (communicated to Bonnet by Dr. Martin.)—A female 70 years of age, of impaired constitution, confined to the bed

68 days with fracture of the neck of the femur. She was kept in Desault's splint; died of bronchitis.

"*Autopsy.*—Knee quite immovable, and appeared fixed by the enlargement of the lateral ligament, lost in the midst of a cellular tissue, infiltrated with serum, and become compact.

"At the interior of the joint is found an effusion of blood, a little serous, amounting to about 30 grammes.

"The portion of synovial membrane which covers the intercondylian groove is very thick, puffed up, and as if ecchymosed. That which covers the crucial ligaments is equally infiltrated with blood. A vascular arborization, intermingled with spots or stains of ecchymosis, is delineated on the internal part of the external condyle of the femur, the cartilage of which has lost its polish at many points. The cartilage of the internal condyle is equally stripped of its polish in part, and generally softened, as well as the cartilaginous lining of the articular surfaces of the patella and tibia, which have taken a very decided yellow tint. The interarticular cartilages are infiltrated with blood. The cellulo-adipous bundles which sustain the posterior surface of the patellar ligament are swollen, and terminated by a fold of bloody bordering, which penetrates into the femoro-tibial articulation.

"The cartilage of the patella is in a great measure absorbed, and considerably softened, as we have already said, in that part which has escaped destruction.

"The bloody effusion shows itself in patches on the parts of the cartilage which are preserved.

"The bones do not present any trace of inflammation."

"*Observation 3d.*—Elizabeth B., aged 72 years, entered the Hôtel Dieu in July, 1839, to be treated for a fracture of the neck of the femur. The fractured limb was placed in extension, and kept in that position by the aid of compressive and immovable splint. After seven or eight weeks of fruitless treatment, as the patient suffered much, we were obliged to take off the splint, and abandon the fracture to the efforts of nature and to repose. This woman died after five months' confinement in bed, without any other symptom than extreme prostration.

"*Autopsy.*—We found the hip-joint healthy; an effusion of bloody serum in the knee; the cartilages yellow and rough in many points, and eroded in those of their parts which are naturally in contact in extension. The joint of the foot, examined with care, presented the same lesions, but in a less decided degree."

"*Observation 4th.*—Peter M., aged 85 years, of a very good constitution, entered the Hôtel Dieu November, 1840, to be treated for an intracapsular fracture of the neck of the femur. He remained in the splint six months, but the fracture did not heal. At the end of this time he contracted a severe diarrhœa, and died in a few days.

"*Autopsy.*—We found absorption of the neck of the femur complete, and all consolidation wanting. The bony extremities of the knee were infiltrated with blood. The femoro-tibial joint contained a great quantity of bloody clots, black, very dull, and not fibrous.

"We found, also, some effused blood in the subsynovial cellular tissue, and even between the articular cartilages, and the bones which they cover; insomuch that these could be denuded with the greatest ease. As to the hip-joint, although there was an intracapsular fracture, it did not present any lesion."

Prof. Valentine Mott corroborates the statement, that the point of greatest destruction is also the point of greatest pressure, varying according to the position of the limb during its period of immobility.

Inquiries made of Professors Willard Parker, Van Buren, Markoe, and Krakowitzer * have been honored with the following replies:

NEW YORK, *Sept.* 3, 1860.

MY DEAR DOCTOR—On looking over my notes of dissections of diseased joints, I am sorry to find that the point about which you are most interested has not in any one of them been particularly noted, and I fear that you will find this to be the fact with most of the published cases, as it is a point to which the attention of observers has not been particularly directed. Since our conversation, however, I have seen the dissection of two knee-joints, amputated at the New York Hospital, which bear upon the point at issue. The first of these was a patient of Dr. Watson, who had been injured, I think, by a railroad contusion, some weeks before amputation. Suppuration and opening of the joint occurred, and during his confinement the limb was kept on an inclined plane at a slight angle. On examination after amputation, we found the usual condition of synovial infl. and suppuration, but precisely at the spots where the condyles of the femur pressed upon the surfaces of the head of tibia, there ulcerative action had gone on to so great an extent that the bone was exposed and already carious. This was the case both on the femoral and tibial surfaces of the articulation, and was the more striking, as in all the remaining portion of the joint, which had not been exposed to pressure, little or no ulcerative action had taken place.

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* The very interesting letter of Dr. Krakowitzer has been unfortunately mislaid.
H. G. D.

The second case was one in which the knee was amputated by Dr. Parker, for long-standing disease, where the joint had been open by an incision some weeks before the operation. We found here more extensive general arthritic degeneration, but the ulcerative action was almost entirely confined to the points at which the bones had been so long in contact. At these points the disorganization had reached a point very nearly equal to that described in the first case, while the other parts of the articular surface showed thickening, vascularity, obliteration, superficial erosion, &c., but no deep or extensive ulceration.

With regard to the other matter we were talking of, viz., the situation of the pus in cases of diseased joints, my notes are more explicit. I find I have recorded eleven dissections of joints which had undergone suppuration, either in the course of chronic disease, or in consequence of injury, seven being cases of chronic disease and four of injury. In all these the dissection was conducted by first opening the cavity of the abscesses and noting how near they approached to the synovial membrane, and then by carefully opening the joint at some point where it was not covered by the abscesses, and carefully tracing the continuity of the synovial membrane. Thus examined, we found that in every case of chronic disease the abscess was external to the synovial sac of the joint, though generally approaching it in several points, so that only the thickened serous membrane intervened between the abscess and the synovial cavity. From these points of contact the abscesses were found to extend irregularly in all directions around the joint, forming numerous cavities and sinuses all communicating with each other, but not communicating with the cavity of the joint, except in one instance. In this case a narrow and tortuous track of communication was found between the extracapsular abscesses and the cavity of the joint, which cavity contained pus. This was the only instance in which, in this class of cases, we found any pus in the joints, or any communication with the abscesses, some of which were exceedingly extensive, and of very long standing. In this exceptional case the abscesses had existed for a very long time, were entirely extracapsular, and only communicated with the joint by the small track described.

In the four cases of disease originating from injury, an entirely different condition of things was found. In these the synovial sac was the seat of the suppurative action, and no extracapsular abscesses existed at all. In the cases where the abscess had not been evacuated before the dissection, the synovial sac was found distended with pus, and in one instance it had given way, and the matter was beginning to burrow up the thigh. In the cases where the joint had been for some time open and discharging, the synovial sac was of course not distended, but it marked the limit of the suppurative action, though itself, as well as the cartilages, were much more extensively destroyed than in the cases of chronic disease. As these eleven cases of joint disease were not selected cases, but embraced all I had a chance of dissecting during the period of observation, some three or four years, I think they may be taken as indicating the general features of the anatomy of the disorder in its two phases, though of course it would not be safe to consider any pathological point as settled by so limited a number of observations.

Hoping to hear from you again on these subjects, which seem to me to have most important practical bearings,

I remain very truly yours,

T. M. Markoe.

Dear Sir—I have received your note of inquiry as to my observations in joints where the same points of surface have remained long in contact with the pressure of the muscles.

I beg leave to reply, that I have often seen in the knee-joint, after amputation, when the joint was opened, that where the surfaces had remained long in contact, the synovial membrane and cartilage were removed by absorption, and the bone at the same point dead for from an eighth to half an inch in depth.

In exsection of the knee-joint, on opening the cavity, I have found the same destruction to have occurred. The same pathological condition is observed at the hip-joint. Indeed, I regard it as established, that if the surfaces of the joints be allowed to remain long in a fixed position, the pressure from the muscles causes destruction of the substance making the wall of the joint. We see the same condition resulting in the joint, that happens when pressure is allowed upon the heel in the management of fracture—viz., ulceration and sloughing.

The more feeble the patient from scrofula or otherwise, the greater the danger from pressure.

You particularly called the attention of the profession to the above pathological state, in the American Monthly, some five years ago, I think. You then stated the great importance in the treatment of hip disease, &c., of keeping the surfaces of the joints from pressure by the application of extending and counter-extending force, and referred to the great value of the India-rubber in applying the power.

The application of the splint in hip disease to establish extension and counter-extension, and at the same time permit the patient to walk and live in the air, as you have practiced for years, is a matter of great moment. You have laid the profession and the public under lasting obligation. Yours truly,

WILLARD PARKER.

To H. G. DAVIS, M.D.

NEW YORK, *August* 20*th*, 1860.

DEAR DOCTOR—In thinking over the many cases of diseased joints which I have examined, after amputation and otherwise, my impression is strong that the greatest amount of disorganization has generally existed at those points where opposed articular surfaces have been habitually in contact with each other. This is, however, a general impression only, as until recently my attention has not been directed to this particular point of inquiry. A recent case in which I exsected the knee-joint in a young woman for chronic strumous synovitis, afforded strong and indubitable evidence on the point in question. In the centre of each of the articular depressions of the head of the tibia, I found a necrosed plate of bone, each about the size and thickness of a dime, lying loosely upon a bed of granulations. The articular surface was elsewhere profoundly altered, but except at these points, not beyond possibility of repair to the extent of anchylosis. I was gratified in recognizing the necrosis in this case, as it demonstrated the propriety of the operation of exsection, which was followed by an excellent result, the patient recovering with an exceedingly useful limb. The points of necrosis, you will have noticed, correspond with the localities upon the head of the tibia, with which the convexities of the two condyles of the femur had been in most constant contact.

My friend, Dr. Krakowitzer, informs me that in a recent successful case of exsection of the knee for similar disease, he encountered the same appearances at the same points.

I have heretofore believed on the evidence adduced by Bonnet, of Lyons, in his monograph upon diseases of the joints, that prolonged immobility of a joint was always followed by inflammatory action, and this has been confirmed by my own observation; but it is not improbable that the contact and pressure of opposed surfaces may play an important part in causing and aggravating the tendency to disorganization at the points of greatest pressure.

Truly, your friend,

DR. DAVIS. WM. H. VAN BUREN.

In the observations quoted from Bonnet, there are two that are more full in their description upon points that are of consequence for illustrating the theory that simple rest or immobility alone is insufficient to affect a joint as disastrously as he believes.

These cases are those of intracapsular fracture of the head of the femur, when the patient had been confined for some time by treatment.

In these, ulceration had taken place, but was *limited to the points of pressure.* There is another fact of importance to which I call especial attention. In these two cases, *all the articulations below the seat of the fracture were disorganized, while the hip-joint, the locality of the injury, (the fracture being inside the capsule,) remains in a healthy, normal condition.* Why should not this, rendered more liable, one would suppose, by the injury, be affected like the others? All have been exposed, apparently, to the same influences.

But there is in reality an important difference of circumstances, and one which bears directly upon the question I am endeavoring to elucidate.

The head of the femur, being separated from the shaft, beyond the attachment of the muscles, remains isolated, and is beyond the reach of pressure from their contraction. It is in a state of *perfect rest,* while the other articulating surfaces of the confined limb, although at rest so far as motion is concerned, yet are liable to be approximated by the muscles, and consequently subject to pressure against each other equal to the contractile force of the muscles in action.

Where the cartilages remain free from pressure we find the joint healthy, while the cartilages subjected to continued pressure in the same limb and under the same circumstances otherwise, are extensively disorganized; the greatest amount of disorganization, too, being precisely at the point of greatest pressure. Are we not forced to infer that pressure performs an important part in this destructive process?

Now, what practical conclusions can we draw from the views advanced?

First.—That in all diseases exterior to the joint, when of sufficient gravity to render the same functionally immovable, and when continued for any length of time, the cartilages should be relieved from pressure by extension.

Secondly.—When the disease is within the capsular ligament, extension should be applied from the commencement, as the destruction of the cartilage will be in proportion to the activity of the inflammatory process.

Thirdly.—In immobility of the joints, from whatever cause, change of position of the articulating surfaces must be frequent, or extension applied. This extension should always be by means of a cord, pulley, and weight, or by some *elastic* material, *the result of both being that a certain amount of extension is kept up, whatever may be the position of the limb.*

This is never fully accomplished by fixing a limb in a given position, as by the ordinary splint, with its so-called extension. When extension is made by an elastic material the muscular fibre becomes wearied, the nervous influence is expended, and the bones come down until the extending power is exerted entirely upon the unyielding tissues. There is, practically, a radical distinction between fixing a limb as by the old mode of extension, and that by which an unremitting draft is kept up upon the muscles, and yet the limb is not so fixed but that the muscles may contract and thereby exhaust their nervous influence, and ultimately rest like any muscle wearied from exercise.

Previous to my introducing it, I have never seen elastic extension recommended, except by one author, and he advised it simply for the purpose of preventing surgical apparatus in fractures from loosening, and not for the reason for which I use it, viz., for overcoming muscular contraction.

It will not be amiss now to state what application of the principle of what I term "continued elastic extension," I have made, and with what results.

In ulcerations of the intervertebral cartilages and of the bodies of the vertebræ, I have devised apparatus that separates the diseased vertebræ from each other, and imposes the labor of sustaining the weight perpendicularly upon the lateral processes. Here it can rest until the disease stops, and the cavity is filled by bone. With this treatment restoration takes place with a good figure.

For morbus coxarius I have originated the treatment by appropriate splints, with which most of the members of the Academy are acquainted. The management of hip disease, based upon this principle, relieves entirely the suffering, puts the parts in the best condition for perfect restoration, and even if the disease is not checked, the limb is kept at full length and in a correct position.

Affections of the knee I treat in a similar manner and with the same success. I have devised an apparatus that will keep up extension upon this joint, and yet admit of flexion of the limb, the whole weighing but a few ounces.

The principle of the latter apparatus is also made applicable to the elbow and other joints.

Moral Insanity in Relation to Criminal Acts. By Dr. J. Parigot, late Commissioner in Lunacy of Belgium, and Chief Physician of the Establishment of Gheel; Honorary Professor of the University of Brussels; Member of several Academies and Learned Societies; Founder of a Private Asylum for Insane, conducted on the Belgian System of Free Air and Family Life, at Hastings-on-the-Hudson.

(Continued from September No., p. 173.)

It is perhaps curious to remark, that the question which now occupies so much both the lawyer and the physician, relative to the responsibility and punishment of insane culprits, should have been settled three hundred years ago by Miguel Cervantes de Saavedra. We find in the third chapter of Don Quixote this curious passage: "El ventero daba voces que le dejasen porque les habia dicho como era loco, y que por loco se libraria aunque los matase á todos:" "the innkeeper cried, as best he could, they should leave him alone; he had told them, besides, that his guest was mad, and as an insane person would be declared *Not Guilty*, even if he killed them all." This is certainly a clear solution of the proposed question—no punishment could be inflicted on a man whose friends, the barber and the curate, had tried all means to cure; but we may suppose that the good sense of Cervantes was much in advance of the public opinion of his time, and that his fiction concerning his hero was not in conformity with existing laws, Spanish or foreign. At all events, we cannot too much admire the genius of Cervantes, who could so well describe a case of insanity originating in a moral cause, (El mucho leer, velar, y poco dormir,) which led to, what might be called, an *errant chivalric* monomania, or a lucid insanity. All the phases of this disease, its moral and physical symptoms, are minutely described. Don Quixote is represented a madman, who, although full of intelligence and good sense, is subject to hallucinations, fits of mania, and sometimes of lypemania, during which he often wounded inoffensive persons, and might have killed many without being considered a murderer.

Now, in spite of the rational solution contained in Cerventes' book, and the so-called *lights* of our century, we are still in the dark. Physicians not only dispute with lawyers on irresponsibility of criminal lunatics, but they cannot agree even amongst themselves; some of them seem apparently to favor the opinion of some judges; they wish to find a *common measure* between sanity and insanity, two incommensurable entities, and, as Drs. Bucknill and Delasiauve do, they try to proportion punishment to the proportionate wickedness and folly of an act. Some other physicians are impressed only by the importance of moral symptoms, and their result in social life; they wander in the debatable land of psychology, not taking sufficient care of the physical symptoms, which nobody can deny to be of the utmost importance. In this latter system, almost every case of immorality which poisons social life should be amenable for its cure to an asylum of lunatics.

Now, a gentleman of great talent, Dr. Trelat, who was in 1848 Minister of Justice of France, has written lately a very interesting work, containing a great number of observations made in his hospital, *La Salpétrière*, in Paris. He says, in his preface, that many of his friends objected to the title of his book—"*Lucid Insanity.*" Well, is there such a disease? We think the author's plan was to describe some cases in which neither the moral nor the physical morbid causes had yet completed their work of destruction. This might forcibly be called lucid insanity—an intermediate state between reason and folly; but we believe that, respecting the real cases of moral insanity, or diastrephia, this title contains an insupportable antithesis. Concerning the diastrephic cases, their moral symptoms are mentioned in the following words: "These patients are insane, but do not appear so, because they express themselves with lucidity; they are insane in their *acts*, not in their *words.*"

The theory of diastrephia is here plainly explained in a few words by a man of great authority; it is not extraordinary that we should find in his work, as in the excellent treatise of Bucknill and Tuke, ample proofs of a perversion of volition, being an isolated moral symptom, but connected with numerous physical signs proving a real insanity.

The difficulty of tracing pathological signs must certainly be very great in the *squanderer*, the *proud*, the *evil-doer*, the *suicide;* and if these symptoms are not connected with a state of mania, lypemania, or dementia, we know that physical signs are sufficiently apparent when looked for in monomaniacs, satyres, nymphomaniacs, diptomaniacs; therefore the examples given by Dr. Trelat demonstrate the difficulty, not the impossibility, of finding and tracing pathological symptoms. Sometimes only an incipient stage of insanity is found, in which the moral symptoms might as well belong to a moral perversion, as they can be considered as the result of organic ailment.

Now, this state of mind forms the "*Debatable Land of Psychology,*" (the title of a very good article in the *London Medical Critic,*) and is not only limited by individual differences of intellectual strength, moral sensibility, or power of volition, but its limits, that is to say, the liability of becoming insane, depend, also, upon individual resistance to morbid causes; thus we see that hereditary influences determine insanity in many occasions where moral causes could not have produced that effect. At all events, that sort of intermediate stage between sanity and insanity is never of long duration, and in all medico-legal questions must be fairly brought or attributed to insanity; the same reason shows that it is impossible to fix a standard for the various forms of insanity, and that each case bears only a comparison with an anterior state of the moral faculties of the same individual.

Dr. Trelat shows in his work that many imbeciles and simpletons, instead of being cared for in asylums or retreats, as they ought to be, are often, from various motives, thrown in the world, exposed to social life, and even become heads of families, of which they soon become the shame or the ruin. He records many private cases, in which young idiotic females, possessed of the ordinary attractions of young persons, found husbands because they were rich heiresses; others were married because it was the wish of their parents, who thought it would, perhaps, better their mental condition! The worst results that can be imagined followed those immoralities; according to the very interesting cases related, these unfortunate females were the despair of their husbands and children. We need not say that it would be very difficult to distinguish weak-minded persons from simpletons and imbeciles, if physical symptoms showing signs of corporeal infirmity and mental degradation could not be found. Imbecility and idiocy are often accompanied by strong inclinations and impulses to generative functions; then it gives a peculiar feature to these unfortunates, called *satyres* and *nymphomaniacs*. Certainly we find in society many individuals who are dominated by such instincts, so that they are, so to say, absorbed by a sort of generative furor, which leads them to the most shameful acts; but if these persons are not idiotic or demented, who could maintain that they are not responsible before the law, for their crimes? Here we find no occasion for an alleged *lucid insanity;* they are nothing but men given entirely up to their brutal passions. Dr. Trelat observes, that generally the monomaniacs display much industry and ability in concealing their fixed ideas; from this he is led to suppose that a great many of them are found at liberty in society, where they are the cause of much unhappiness; we believe there is a little exaggeration in this proposition. Dr. Trelat is not the first observer that has supposed the whole humanity was insane in a certain degree; the more or less making the only difference between the so-called sane and insane persons. It is true that, by indulging so many causes of insanity, we appear to set that disease at defiance with us. But if there was a sufficient reason, or an unlimited power to inquire into the private affairs and conduct of individuals immoral or scandalous, to what abuses would it not lead? How many eccentric, wayward, or systematic persons would not be deprived of their liberty in order to prevent them from injuring others or themselves? Curious ideas, peculiar habits, &c., would be considered as real symptoms of insanity. We protest against such notions; and in the several papers published on diastrephia, we have always insisted that all the pathological signs should be present and described, in order to insure the correctness and value of medical affidavits concerning insanity. Now, we must say, that the practice of Dr. Trelat is much different from his theory; for all the cases he mentions as lucid monomaniacs, are real maniacs presenting moral and physiological proofs of their infirmity.

Everybody knows the characteristics which distinguish the *erotomanes* from nymphomaniacs; maniacs, and the so-called monomaniacs, present the moral symptom that their conscience is deranged or bewildered by delirious conceptions or perverted ideas. Now, the erotomaniac is deluded by an exaggerated or perverted feeling, which leads him to lypemania. Now, besides other signs of insanity, they present the symptom of a delirious Platonic love; but love has often turned people mad. Can we say that all lovers are without self-control and insane?

The chapters devoted first to illustrating the *lucid insanity* of jealous wives, husbands, and lovers, and afterwards those dedicated to proving the insanity of *squanderers*, *adventurers*, the *vain-glorious*, the *ambitious*, and even *evil-doers*, are remarkable as giving many instances of incipient insanity, or showing the possible continuation of vices in the moral life of insane persons. Dr. Trelat relates, also, several cases of dipsomania, which disease we have referred to one of the special perversion of the will. The special character of that disease is the periodicity of the fits, accompanied or followed by a more or less protracted mania. In many cases we had occasion to observe, the intervals of lucidity have varied from a few days to two, three, and even four years.

The name of dipsomania may be extended from insane liquor drinkers to the opium and haschich-eaters. Casper, the celebrated Prussian expert in medico-legal questions, relates the case of a maniac who employed chloroform to bring on a certain state of mental enjoyment.

As to the insane kleptomaniacs, there are no lucid intervals when the stealing mania is accompanied by idiocy, dementia, or general paralysis; but when that moral infirmity is a symptom of insanity, it is accompanied by other symptoms which leave no doubts about the real irresponsibility of the evil-doer.

All the cases that Dr. Trelat describes as *lucid manias* may be referred to diastrephia, or perversions of the will. The forms of that disease are various almost as each individuality. In all the cases mentioned in Dr. Trelat's book, the fits are intermittent, as we have described them in our first memoir read before the Academy. Unhappily, physiological symptoms have not much attracted the attention of the able French writer; however, he finds two special pathognomonic symptoms in perversions of the will—1st, In no form of insanity is ingratitude so great as in perversion of the will; 2d, These patients give no ear to counsel or admonition, and thus never change their mind or their resolutions. In resolution, we may say that Dr. Trelat's work throws a great light on the moral interest which this matter involves in social life; he has laboriously developed rather the moral bearings of lucid insanity than its scientific symptoms and treatment; so much that we may say, that, save the acknowledgment of the *insanity of acts*, moral insanity and diastrephia have not much profited by this special work of one of the most able French writers.

We have still some considerations to add on the discussion which took place before the Academy of Medicine on moral insanity. On one side metaphysical arguments were offered by high and respectable authorities in jurisprudence; whilst on the other side medico-psychological principles were the firm ground taken and defended by the majority of the gentlemen that addressed the assembly. After the sitting, it appeared, from the impression of several learned members of the Academy, that theoretical arguments had had a fair trial, but that the professional and practical side of the important questions involved in *diastrephia* remained still to be elucidated in some future discussion. Unhappily, many of the men who are the best judges in this specialty are seldom at liberty to attend at the sittings of the Academy. At all events, it will perhaps not be inappropriate to review some of the principles on which the propositions of these our several papers are founded. The question is of great importance, should the subject of insanity ever be re-examined by the legislative assemblies of the different States of the Union. Besides, we think it an imperative duty which we owe to insane sufferers that courts and juries should understand these matters in their practical application, and that they should be laid out before them *beyond doubt*, so that it would clear the cases in their mind. The consequence of this would be, that moral insanity, or rather, the false pretence of this name, could no longer secure impunity, and that the real cases of diastrephia should be easily proved. Perhaps such a final conclusion might have the advantage to put an end to *bona fide* differences of opinion between lawyers and experts.

In every disease of the mind, mental phenomena must necessarily have physiological facts for their basis, and even as a condition of their existence. What symptoms are we, then, obliged to find and describe in the so-called moral insanity, or diastrephia? I answer—both moral and physical: the first relating to a perversion of the human will and instincts; the second, the somatical facts, the symptoms perceptible to our senses. These points settled, all the other evidences support, always, the fundamental inquiries. Out of that, physicians do not want to venture in vague theories; and for them, *what is not disease in diastrephia is crime.*

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The late trial of Mrs. Real has been a good instance of an unsuccessful attempt to turn a criminal action into moral insanity; or, at least, into a transitory homicidal mania. This Mrs. Real had shot her alleged husband because, after enduring a long course of abuse, both physical and moral, she had actually seen him in the company of another girl. The public of New York had, in general, much sympathy for the accused; she was young, honest, laborious, and had been really ill-treated by the deceased, who, at least, had deceived her by the imposition that they had lawfully, though secretly, been married. Mrs. Real had found to defend her two lawyers of great talent; a young member of the bar of New York, *Mr. Dumphy*, and the celebrated jurist and orator, Mr. Edwin James. A fact which must not escape our observation, and which proves the remarkable talent of Mr. James, is, that he has been able, in several trials and lawsuits concerning insanity, to prove to juries and obtain verdicts in favor of the parties he defended; making them sane or insane, just as the necessities of his clients required. We must confess that we felt for the sake of justice great apprehensions that this gentleman would have been able to show that the accused was insane, and ought to be sent to a lunatic asylum. With that aim, the eloquent lawyer treated *ex cathedra*, a question of moral insanity taking its origin in the natural feelings of an offended wife, but as non-experts on insanity do, without considering the symptoms of such disease, and quoting largely what suited his pleadings out of the so-called *most approved* writers on medical jurisprudence; of course the orator animadverted very severely (it was mentioned by all reporters of newspapers) on the testimony of Dr. Ranney, one of our well-reputed experts. Now, we must say, that we found such censure of a counsel on medical testimony perfectly ridiculous; but only excusable, perhaps, with a view to produce an effect on the jury. Was the counsel for the defence unable to find a medical man to oppose Dr. Ranney? Else the question would be, whether physicians, and especially experts, who accept no compromise, are obliged to know no more about such cases than lawyers, attorneys, or judges, who occasionally and hurriedly consult psychological treatises, and who, having given a glance at some cases, mistake them for standards in medico-legal inquiries.

Nothing is more curious than to see both sides armed with many volumes on a science they do not understand; and really, my impression was, that the best argument they could find was to throw them at each other's heads. Who could suppose that Dr. Ranney and Dr. Tilden Brown would be obliged, on the stand, to exchange or lower their special knowledge and experience to meet a sort of second-hand psychiatry? Dr. Ranney resisted all false and captious inductions; he would not see or recognize real symptoms of insanity in the outrage perpetrated on human life. Dr. Tilden Brown, in his direct and cross-examination, was consistent with the latest progress of psychiatry; saying that he could also not find any symptom of insanity in the accused. We find, in this trial, numberless proofs of ignorance of psychology; lawyers spoke of moral insanity, and, in fact, pleaded a sort of transient homicidal mania or fit. Now, the institution of a jury which has the power to appreciate as it pleases the facts presented, either in civil or criminal instances, though incompetent *scientifically*, has proved good in this case. A conscientious duty was performed in spite of the eloquence of the defence; the District Attorney baffled all efforts against the simple evidence of facts: that a man had been killed in a fit of frenzy and vengeance.

The honorable judge took his share in the many psychological errors of this trial; he said, for instance, that homicidal insanity is committed *without any motive.* Experience proves, very often, the reverse; and, might we not ask the learned gentleman whether it is not more rational to look, first, for proofs of insanity in the presence or absence of pathognomonic symptoms, rather than in motives which are but of secondary value?

This trial has had a favorable result for the cause of justice, ever sacred to our profession, which has maintained truth against the contempt thrown on her by ignorance; and favorable even for that unfortunate girl, whose repentance will no doubt awaken the mercy of the executive power.

Cases in Military Surgery, treated at the U. S. Military Hospital, under the charge of Alex. B. Mott, M.D.

Case 1.—John H. Cornelius, Brevet 2d Lieutenant, 28th Regiment North Carolina, (prisoner of war.) Wounded at the battle of Hanover Court-House, May 27th, 1862, by a Minié ball, which entered the interior part of Scarpa's space and the anterior part of the superior third of the thigh, within three-fourths of an inch of, and external to the femoral artery, emerging posteriorly on the thigh about an inch below the point of entrance, completely fracturing the femur, and filling the track of the ball with splinters, which were extracted at the time of injury.

Upon examination, the injury proved to be a pretty extensive compound fracture. The wound healed kindly, and a large amount of callus was thrown out.

At the time of admission, June 25, the limb was shortened an inch and a half. Extension was immediately resorted to by means of the simple adhesive straps, pulley, and a fourteen-pound sand-bag; in five weeks, the limb had been extended an inch, and at the time of his exchange, August 14, he was walking about with very little appearance of the injury, the leg lacking but a quarter of an inch of its normal length.

Case 2.—Jos. H. Sylvester, Sergeant Co. B, 2d Regiment Maine Volunteers, wounded at the battle of Hanover Court-House, May 27, 1862. The ball entered the lower third of the thigh, on the inner aspect, emerging posteriorly on the middle third, producing an oblique and longitudinal fracture of the lower third of the femur, and leaving a narrow fragment to hold the remainder of the bone together. Bandages, cold water, creosote and water, with a pad acting similarly to the double inclined plane, soon produced a reunion without shortening.

Case 3.—Daniel Glacken, private Co. I, 73d Regiment, New York Volunteers, wounded at the battle of Williamsburg, Va., May 5, 1862. The ball entered the left inguinal region, half an inch above Poupart's ligament on the external side, and barely escaping the femoral artery and vein. At the time of receiving the wound he was erect, in the act of making a charge upon the enemy; he instantly fell, and remained upon the field of battle five hours, when he was taken to the field hospital, where his wounds were dressed with cold water. The hæmorrhage was slight, and the ball remained in the wound. He was transported to Fortress Monroe, where he remained only a short time, coming to New York via Baltimore, where he tarried two days; upon his arrival, May 14, 1862, the wound was about an inch in length, the femoral artery pulsating on the inner edge; it was discharging freely, and was very painful, and the patient unable to move. He continued to suffer such intense pain, that it became necessary to give him sixty drops of Magendie's Solution daily. An attempt was made to probe for the ball, but without success. This state continued until the 5th of June, when it was determined to enlarge the wound on the external side and search for the ball. The patient was accordingly etherized, and the opening enlarged by about an inch. Dr. Alex. B. Mott, surgeon in charge, introduced his finger carefully, and after considerable manipulation, the ball could be detected downwards and backwards between the gluteal muscles; and the sack of the peritoneum could be distinctly felt above the finger. A pair of curved polypus forceps were introduced, and the ball extracted. It proved to be a round musket-ball; after its extraction the pain diminished and more perfect rest was obtained until June 15, when a swelling was noticed on the thigh and a large abcess formed, extending from the gluteal region to the knee, beneath the fascia lata of the thigh. Upon being opened, it discharged a large quantity of fœtid pus, which discharge continued so profuse for about forty days, that it became necessary to give syr. ferri. iodid., and stimulants, to keep up the patient's strength. August 1st, the patient seemed to improve slightly, the pain became less severe, the discharge less and more healthy, and the swelling in the hip considerably diminished. The improvement continued, and on the 15th of August he was able to walk about the ward on crutches, and by the 1st of September, could walk with very slight assistance from a cane.

Case 4.—George F. Parker, Co. —, 72d Regiment New York Volunteers, wounded at the battle of Williamsburg, Va., May 5th, 1862, by a Minié ball, the ball entering the right thigh posteriorly, while retreating from a cross-fire. After receiving the wound, he walked half a mile to the surgeon's quarters. There was but slight hæmorrhage. The wound was dressed with cold water. He entered the hospital at Fortress Monroe on the 9th of May. At this time the wound was discharging large quantities of sanious pus, and an abscess appeared on the posterior part of the thigh, which was opened May 18th. After the escape of the pus, the opening was probed, when a foreign body was discovered. This proved to be the ball, which was extracted. A further examination detected a quantity of twilled cotton, a part of the clothes, and a large piece of knife-blade, which was carried into the wound by the ball. Upon his admission to this hospital, May 25th, 1862, the wound was in a very unhealthy condition, with a tendency to slough, and discharging large quantities of fœtid pus. The patient was emaciated, and suffering from night-sweats. He was put upon a tonic and stimulating treatment, with acids to control the sweating, and flaxseed poultices to wound. But it continued to be more unhealthy, and showed symptoms of gangrene. Poultices of flaxseed, yeast, and charcoal were applied, with ten drops of creosote to relieve the pain and check sloughing. In ten days, a large slough came away, having burrowed through the fascia lata, as well as through the muscular structure covering the bone. The wound was freely cauterized with dilute nitric acid and nit. argent., and occasionally filled with pulv. cinchonæ. The wound now began to look somewhat more healthy, and was washed daily with Labarraque's disinfecting solution, and dressed with ungt. bals. Peru. Ol. morrhuæ was given freely, and in six weeks the patient was able to walk about.

Case 5.—George C. Flanders, Co. E, 8th Ohio Vols., wounded at Winchester, Va., March 23d, 1862. While in the act of climbing a fence, the ball entered the left leg, grazing the posterior edge of the tibia, 6½ inches below the internal condyle. Passing through the muscular tissue, it lodged in the outer side of the leg, 3 inches from the internal condyle of the tibia, and inside of the fibula, causing a slight bulging of that bone, separating the epiphysis of the tibia, and producing a compound fracture of the same at place of injury. After being wounded, he walked alone to the ambulance, which, being full, he caught a runaway horse and rode to the hospital. There was considerable hæmorrhage at the time of receiving the wound, which was not dressed until the third day after its reception. Inflammation had then set in. The leg was greatly distended, hot, and intensely painful, with violent febrile symptoms. The surgeon despaired of saving his life, and amputation was decided upon, but was postponed at the request of the patient. A large tobacco poultice was applied, and fourteen days after reception at hospital the inflammation began to subside, together with the febrile symptoms. Five days later he was able to walk on crutches. Before leaving the hospital at Winchester, an abscess formed over the anterior aspect of the tibia, which, upon being opened, discharged fœtid pus. Upon admission to this hospital, May 10, 1862, the wound was discharging a healthy pus, and a small portion of the tibia was exfoliating. In about four weeks the abscess returned, and discharged unhealthy pus. A few days later the wound began to show signs of diseased action; granulations pale and weak; edges dull, red and ragged. This was followed by an appearance of phagedena. The orifice of the abscess, which had nearly healed, set up the same action, and rapidly spread to the size of the cyst of the abscess. The treatment, which, up to this time, had been of a simple character—ungt. Peru., with an occasional poultice—was changed to the charcoal poultice, with dilute nitric acid, to destroy the slough. Creosote, gtt. xxx., on the poultice, alone seemed to soothe the intense agony he suffered. The patient now sank rapidly from the suffering and exhausting effect of the discharge. Quin. et ferri. cit. āā. gr. iij., was given thrice daily, with as much stimulus as he would bear. Large doses of Magendie's solution of morphia were given to insure comfort. The wound increased until it acquired the size of six inches in length, by seven inches in width, barring the anterior surface of the tibia. At the end of fifteen days the patient began to improve; healthy granulations began to appear, the sloughing ceased, and the wound rapidly closed up. The anterior surface of tibia, which had remained bare, now exfoliated in large scales, showing healthy bone beneath. After the removal of the exfoliated bone, the wound closed up rapidly, and gave no further trouble.

Case 6.—George Sears, Co. H, 72d Regiment, N. Y. Vols., wounded while on picket near Fair Oaks Station, Va., June 12th, 1862. The ball entered midway between the right nipple and the median line, passed upwards, parallel to, and emerged in the middle of the left arm, on a line with the axilla. The wound was about nine inches in length, by three inches in width. The first half the distance, the ball penetrated to some considerable depth, forming a trajet, and became superficial the remainder of the distance. After receiving the wound, he walked about a mile, when he fell. There was, at this time, considerable hæmorrhage, which continued for six hours, when it ceased spontaneously.

The hæmorrhage returned slightly the next day, while on the transport, on which he was taken to Albany, N. Y., where he arrived on the 21st of June. The day following the arrival the surgeon in charge probed the wound, and laid open the trajet, at which time he spit up several mouthfuls of blood. On the 1st of July symptoms of necrosis began to show themselves, and small pieces of bone gradually worked their way out; he was not able to assume a recumbent posture on account of great dyspnœa. On arriving at this hospital, August 2d, the wound was healing kindly, but pieces of bone still continued to come away. In three weeks after his arrival he was discharged cured.

Case 7.—Charles Munson, private, Co. K, 2d Regiment, N. Y. S. M., while working in the trenches before Yorktown, received a shell wound in the elbow, and also a gunshot wound in the back, at the top of the sacrum. After being wounded, he was able to walk some distance. He was sent to the General Hospital at Yorktown, and while there several pieces of bone were extracted from the wound in the elbow-joint; the wound in the back gave but little trouble.

Upon arriving at this hospital, May 25th, the arm was permanently flexed, presenting at the elbow an extensive fungoid appearance—the wound being five inches in length, and three in breadth, and causing the most intense pain. The wound in the back healed kindly, giving little or no trouble. Simple water dressings were applied to the elbow-joint, but the treatment was without avail; and as the system was greatly below par, and nothing was to be gained by delay, it was decided to amputate. On the 31st of May the ordinary circular operation at the middle third of the humerus was performed. The patient appeared to do well until the 4th of June, when he complained of great pain in the knee, followed by a violent chill. Brandy, quinine, and warm applications were used to restore warmth and circulation. Another chill of less violence succeeded in the afternoon of the same day; after which, the temperature of the affected limb being slightly increased with a pulse of 140 per minute, it was thought advisable to administer the following prescription: ℞.—Tr. aconite, rad. gtt. xvj.; aq., ℥ij. M.—To be taken in tea-spoonful doses every second hour. In twenty-four hours the pulse had fallen to 100, when the aconite was discontinued. The temperature of the leg continued above the normal standard, with pain and excessive swelling, causing tension of the integument. It now became necessary to give twenty drops of Magendie's Solution to insure sleep. The wound in the back at this time was almost healed. Together with the chills, which had now lost somewhat of their strength, profuse perspiration at the time set in, which weakened still more his already debilitated frame.

The quinine, which he had been taking in the form of pills, was now ordered in solution, with the excess of the acid sufficient to make ten drops to each dose, given every fourth hour. This treatment somewhat relieved him.

About two weeks after the commencement of the attack, he began to complain of his mouth, with great difficulty of deglutition. Upon examination, cancrous ulcers were found upon the tongue and mucous membrane of the mouth. Chlorate of potassa was used, but with little benefit; also sodæ biboras, with honey, and various other remedies, but all to no purpose. During the course of the disease there was a very troublesome diarrhœa, alternating with constipation. The chills continued, but were of a more feeble character. During this time, the wound from the amputation was not progressing favorably. The discharge was scanty, and the stump painful when moved. In the progress of the disease the leg became smaller, and at the time of his death assumed the normal size.

All remedies failed to afford relief, and he gradually sank, dying on the evening of June 29th, thirty-five days after admission, and thirty after the operation.

Autopsy, two hours after death. An incision was made along the course of the femoral artery, and upon coming down to the sheath of the vessels, they were found so firmly adherent that they could only be separated with the greatest difficulty. The artery was perfectly normal, and the vein greatly distended, with irregularities in its calibre at different parts; and in tracing it, only one of the smaller branches being divided, a considerable quantity of pus escaped. The greatest amount of disease was about Poupart's ligament.

On continuing the dissection beneath the vein, on the upper third of the thigh, the scalpel cut into quite a large abscess among the muscles. Upon removing the whole of the femoral and internal iliac veins, and dividing the former, a complete plug of blood and pus was found.

Considerable interest having arisen in the question as to whether the wound in the back had any connection with the venous trouble, a thorough examination revealed no such trajet of the ball. The wound in the back was no doubt produced by a piece of the same shell which caused the wound of the elbow. The kidneys and lungs were in a normal condition; the liver gave no evidence of venous trouble.

Case 8.—William Cockefair, private, Company I, 9th Regiment New York Volunteers, Hawkins' Zouaves, wounded at the battle of Camden, April 19th, 1862, by a musket-ball in the left shoulder posteriorly, about an inch and a half below the acromion process of the scapula. The wound was received whilst he was lying on his abdomon, where he had just dropped to avoid a shower of grape and canister. He was able to rise immediately, take his musket, and walk to the field hospital, which was placed about two hundred yards in the rear. There was not much hæmorrhage. Two days after the action, he was anæsthetized, and the wound probed, but no ball was found. From the time he received the wound he was unable to use the injured arm, and suffered continuous pain. Cold water only was used as a dressing. On the 4th of May he was placed upon the hospital transport Eastern Queen, and arrived at this hospital on the 9th. Upon entering, the arm was firmly flexed and slung forward on the abdomen, the pulse was accelerated, and the wound discharging a fœtid and unhealthy pus. The patient continued to suffer intense pain, so that anodynes had to be freely used. As he was evidently failing, a consultation was held on the 17th of May. The patient being etherized, the opening was enlarged to admit the finger, when it was found that the head of the bone was greatly shattered; so much so, that amputation was deemed advisable. The arm was therefore amputated at the shoulder-joint on the 18th of May, by Dr. Alex. B. Mott, surgeon in charge, assisted by Dr. John J. Crane. The operation chosen was the double flap, that of Lisfranc, which is now generally adopted. There was little or no hæmorrhage, and the patient rallied well. The day following the operation, the wound discharged a large quantity of pus, and continued doing so for some time. The patient's appetite immediately improved, and his strength proportionately, so that on the fifteenth day after amputation he was able to walk about the ward, and on the twenty-first day walked out. The arm was dressed throughout entirely with dry lint. The ligatures all came away on the tenth day.

Case 9.—William Stroubel, private, Company K, 11th N. Y. Volunteers, Ellsworth's Fire Zouaves, wounded at the battle of Bull Run, July 21st, 1861. The ball entered the left leg, near the external malleolus, passing in an oblique direction, and emerging alongside of the os calcis, on its inner side; thus passing completely through the joint. After receiving the wound, he was taken prisoner, and paroled January 17th, 1862. During his confinement, an extensive carious action went on in the bones of the tarsus until several pieces of bone had to be extracted. Abscesses formed constantly until the foot was removed. Upon arriving at this hospital, May 25th, there were four fistulous openings, discharging a sanious fluid. The wound was probed a number of times, but as the foot had already been temporized with long enough, amputation was thought the best, and only treatment. Circular amputation was made about the lower third of the tibia on the 20th of June, by Dr. Alex. B. Mott, surgeon in charge, assisted by Dr. John J. Crane. The wound was closed up about two hours after amputation, and progressed well until the third day, when it began to bleed slightly, and looked inflamed and angry. It was thought best to cut the sutures, and look after the bleeding vessel. Upon opening the stump, a large clot of blood was found and removed, and the vessel tied. The stump progressed rapidly. In ten days the patient was able to get about on crutches, and in six weeks the wound was entirely healed.

Case 10.—James R. Burns, Company E, 174th Regiment New York Volunteers, wounded at Williamsburg, May 5th, the ball passing through the elbow-joint. At first the wound did well, but upon his arrival at this hospital, May 25th, was inflamed, and discharged a fœtid pus. His strength failed so rapidly that amputation was thought best, which was performed on 19th of June, by Dr. Alex. B. Mott, surgeon in charge. The *stump was left open*, and dressed throughout with dry lint. He rallied immediately, and in a month was able to get around.

Case 11.—Charles Mensch, private Company H, 33d Regiment N. Y. Volunteers, wounded in the action at Williamsburg, Va., May 5, 1862. The ball entered about four inches above the patella, passed completely through the joint, and emerged at the external side of the tibia, three inches below the lower border of the patella. The wound was received during the bayonet charge, the knee being flexed. He fired his piece several times after receiving the wound, but finally fell, and was carried to the rear, where water dressings were applied.

Upon his admission to this hospital, May 14th, the tissues of the joint were wholly destroyed, the wound discharging a thin sanious fluid, and the probe could be passed along the trajet of the ball. A consultation being held, amputation was deemed advisable; but the patient being averse to losing the limb, it was not thought dangerous to temporize. His strength, however, continued to fail, with intense and continuous pain. Longer delay was therefore deemed dangerous. Accordingly, on the 31st of May, the leg was amputated at the middle third of the thigh, by Dr. Alex. B. Mott, surgeon in charge, assisted by Dr. John J. Crane; the double flap operation being chosen. The patient bore the shock remarkably well, and rallied rapidly. The flaps were brought together by interrupted sutures, and everything went on well. On the second day the flaps seemed to have united by first intention; but on the afternoon of the seventh day, the edges of the wound presented a thickened and livid appearance. The capillary circulation was very feeble—the adhesions and granulations could be easily broken up—the discharge was scanty, thin, and fœtid. The patient at this time was pale, with extremities cold, and a slightly accelerated pulse. Stimulants and nourishment were freely given, but with no success, as the patient sank, dying in ten hours after the first appearance of the disorder, which proved to be gangrene.

Case 12.—Alvah Cotton, private Company F, 22d Massachusetts Volunteers, wounded in action at Gaines' Hill, on the 27th day of June, 1862. The Regiment being outflanked, was forced to retreat; it was during this retreat that he received his wounds.

The first ball entered the left nates obliquely, emerging through the perineum, and passing directly through the scrotum, destroying the right testicle, and cutting off a piece from the right side of the glans penis. The second ball entered about half an inch above the styloid process of the ulna, passed through the fascia and tendons, and emerged at the metacarpo-phalangeal articulation of the thumb. After receiving these wounds, he walked about twenty rods to a log shanty, with three others. In a short time a rebel soldier came along and threatened to bayonet them; but upon his expostulating, he ordered them to the rear as prisoners. He then walked about a third of a mile to a creek, where he asked the rebel to let him drink; in striving to get some water, being fatigued by his exertions, and exhausted by the hæmorrhage from these wounds, he fell into the creek, where he remained about two hours. By this time the fighting was over, and the rebels having all they could do to look after their own wounded, they, upon his solicitation, took him out of the water and placed him upon the bank, leaving him covered with his blanket. He slept there all night, and in the morning the rebels came back, and removed him to a hospital at Gaines' Hill, where he remained about a month. He was then sent to Richmond, and from thence was sent North on parole. While in hospital at Gaines' Hill, the arm was attacked by erysipelas, which so increased that, upon his arrival at Fortress Monroe, it was deemed necessary to lay open the arm from the wrist to within an inch of the axilla, on its internal aspect. The wounds were dressed throughout with cold water, except during the attack of erysipelas, when poultices of flaxseed were used. Upon arriving at the hospital, August 1st, the wound of the scrotum had almost healed, and in fact had given very little trouble. The arm was slightly swollen, with a little appearance of erysipelas; the wound in the arm was discharging large quantities of quite healthy pus, but was not healing. The arm began gradually to swell, and the discharge increased. His vitality, already low, became weaker daily, until it was deemed best to amputate, which operation was performed on the 16th of August, by Dr. Alex. B. Mott, surgeon in charge, assisted by Dr. John J. Crane. The circular method was chosen, and upon the incision being made, the parts were found extensively infiltrated with serum. The patient rallied well after the operation; water dressings were applied, and dry lint used for the first month, at the end of which the patient was able to walk slowly about the ward.

Translations from the German. By C. A. Hartmann, M.D., of Cleveland, Ohio.

X.—*Talipes Varus.* By Dr. Bartscher, of Osnabrueck.

The difficulty in the treatment of club-foot is to keep the foot in the required direction. Neither the very serviceable apparatus of Stoess, nor the excellent machine of Stromeyer, avoid this difficulty sufficiently, and the too early application of Scarpa's shoe results in the return of the abnormal position. I have derived much advantage from an apparatus of my own invention, consisting of a brass shoe, with two splints attached to it. The shoe is made to fit the straightened foot, is well lined, and fastened by means of two straps running over the back of the foot. The splints can be made of wood or brass; they ought to cover the whole extremity like a shell,and to be so arranged as to allow flexion of the knee. Near the lower edge, each splint has several holes, to receive pegs fastened to the sole of the shoe; the most anterior of these holes is to run upwards, in a somewhat curved line, so as to allow the corresponding peg on either side to move in that direction and turn the foot upwards. The splints are kept in position by strong india-rubber bands above, and by leather straps running under the sole. On the upper end of the external splint there is a small dentated wheel, connected with a spring, by means of a catgut running over which, and fastened to the anterior point of the shoe, the flexion of the foot can be regulated.

In a short time the children are able to walk with straightened feet, in this apparatus. Gradual flexion of the feet is obtained by turning the wheel a little every day, by means of a winch, and keeping the foot in a flected position for a certain length of time.

Club-foot is usually congenital; if acquired after birth, it is either a continuance of the fœtal position of the foot, or is developed by the attempts to walk, in consequence of laxity in the ligaments of the joints, which may be a primary defect, or result from dentition or infantile atrophy. The least frequent cause is congenital paralysis of the peroneal muscles.

Threatening inversion of the foot can be cured by proper manipulations and dressings with adhesive strips and plaster of Paris. In laxity of the capsular ligaments, I have had the best results from high shoes, strengthened on either side by triangular splints of sole-leather, so as to allow only flexion and extension of the foot, while abduction and adduction are prevented.—*Journal für Kinderkrankheiten.*

XI. *The Intestinal Croup of Children.* By Dr. Th. Clemens, of Frankfort-on-the-Main.

This disease, which our children have in common with the cow and the hog, has never yet been specified and contrasted with laryngeal croup. It is of less frequent occurrence, and not very dangerous; remaining always local, and not endangering life, unless a great portion of the intestinal mucous membrane is involved. The fibrinous exudation may be copious enough to prevent, at least in the smaller intestines, the passage of the excrements. One child rallied from a dying condition after the sudden excretion of a ball, formed mostly of pseudo-membranes. The exudation is always much more copious than in the corresponding affection of the larynx.

Symptoms.—When the smaller intestines are affected, there is always diarrhœa, and sometimes also vomiting of half-digested matters. Like croup proper, this form also arises from a preceding catarrhal affection. The well-developed disease is marked by intense fever, with nocturnal exacerbations, and great change of the features within a very short time. Depression and emaciation are inseparable from a long duration. A rapid recovery follows the removal of the false membranes, although portions of them may continue to come away for several days. The patients are soon quite lively again, and regain their appetite in a short period.

Prognosis.—There is rarely any danger, except either from obstruction of the intestinal canal by too copious exudation, or from too extensive a portion of the mucous membrane being involved. In the latter case, the interrupted chylification may destroy life, as the obstructed respiration does in laryngeal croup.

Complications.—One of the four cases observed occurred subsequently to imperfectly developed measles. Plastic exudation of the intestinal mucous membrane probably happens frequently in this catarrhal affection.

Treatment.—Calomel in small doses, and a saturated alkaline solution. A few leeches, and a decoction of poppy-heads, if there is much pain and fever.—(*Journ. für Kinderkrankh.*)

XII.—*Scarlet Fever and its Treatment.* By Dr. A. Clemens, of Frankfort-on-the-Main.

The mortality and malignity of this disease seem to be due more to improper treatment than to the malady itself. In the great majority of cases the first thing exhibited should be an emetic. It has a decidedly favorable effect on the whole course of the disease, and mitigates particularly the inflammation of the throat. Emetics may also be of advantage at a later stage, when the trouble in the throat increases again, the cervical glands swell, the tongue presents a fur in the middle, while the margins are reddened and dry. For fifty years, and during three epidemics, I have never met with a malignant scarlatinous angina, and it seems to me the free use of emetics has prevented the development of that form. Even during desquamation, an emetic—ipecacuanha in that case—may be required. The indication for it is a scanty urine, a dry and hot skin, a dry tongue, swelling glands, increased pain in the throat, and sensibility of the slightly tumefied abdomen.

Purgatives are undoubtedly of great service in all forms of scarlatina. They are indicated as long as the eruption flourishes, or angina, congestion about the head, a hard and frequent pulse, dry heat of the integument, dry and furred tongue, and great thirst are present. Three or four fluid evacuations daily are sufficient. During desquamation, the bowels should also be regularly moved. In that way, the sequelæ are best prevented.

A day after the emetic, or sooner, I prescribe to children, from one to three years of age, syrup of buckthorn, a tea-spoonful every hour; to older ones, lenitive electuary, ʒvj., syrup of marshmallows, ℥ss., in the same dose; to adults, compound infusion of senna, ℥iij.–iv., tartrate of potash, ʒij.–℥ss.; a table-spoonful to be taken every hour, with syrup of raspberries, ℥j. If too many evacuations follow, the medicine is put aside for a few days, or a refrigerant given in its place, consisting of Haller's Acid Elixir, ʒss.–i., raspberry-water, ℥iv.–vi., simple syrup, ℥j.; a table-spoonful every two hours. Cold water serves for a beverage; nourishment is not required, thin water-gruel being sufficient.

A third remedy in scarlatina is the evacuation of blood. In the first stage of the disease, nothing should prevent leeching or venesection, if head and neck are prominently affected. Leeches will do for children, and should be applied near the carotids. The bleeding is best continued by a flaxseed poultice.

After the disappearance of the eruption, and before desquamation commences, it is proper to give chlorine water, to children, ʒss.–ʒij.; to adults, ℥ss., in twenty-four hours. The addition of syrup decomposes the mixture, and must therefore be avoided; it may be administered in distilled water. The same treatment, with occasional intermissions, is continued during the period of desquamation. Constipation of the bowels requires a saline cathartic.

Cerebral symptoms call for the application of ice to the head, bleeding, and a blister in the neck.

The temperature of the sick-room should be kept at 15° R., and fresh air be cautiously admitted every day. Milk and water for breakfast; water-gruel, and, later, some cooked fruit constitute the diet. Cold ablutions are unnecessary, and a warm bath not sooner than one or two weeks, subsequent to the completion of the desquamatory process. During that period, the skin may be cleaned with a towel and a little warm vinegar.

Isolated sporadic cases of scarlet fever can be produced by catching cold.

The eruption is not always present, and liable to many varieties. Inflammation of the throat, intense fever, and the peculiar frequency of the pulse, are the principal symptoms. Frequently dyspnœa and slight fever, followed by constipation, scanty urine, and hydropical affections, are the only indications of the disease.

Scarlatina on the mucous membrane of the intestines is not of very rare occurrence.

The albuminuria consequent upon the disease is similar to that of Bright's disease, in not originating, like the passive forms of dropsy, from a misproportion between exhalation and resorption, or from organic diseases. The affinity of the scarlet fever contagion to the uropoietic organs remains yet to be explained. Anasarca is certainly due to a specific influence on their mucous membrane. The ammoniacal odor of the urine seems to point to an alkaline character of the contagion, and this may explain the good effects of carbonate of ammonia, acids, and chlorinated water.

Every epidemic of scarlatina is accompanied by an increased number of abortions and premature deliveries.

The appearance of scarlet fever during child-bed is a dangerous complication, on account of this specific relation of the contagion to the womb. Halm described, in 1837, the scarlatina puerperalis as differing from scarlet fever in not being contagious, appearing within three or four days after delivery, frequently not affecting the mucous membranes at all, and showing no regularity in regard to the fever and eruption. The fever comes suddenly, with a well-marked chill, and a very quick, full, hard pulse. Slight pains in the womb disappear with the coming eruption, which usually covers rapidly the greater part of the body, frequently on the second day of sickness, without mitigation of the fever. This disappears, in favorable cases, with the eruption on the third or fourth day, when desquamation follows immediately. Without any apparent cause, this may result in peritonitis, splenitis, dropsy, or pleuritis, with extensive exudation. Where no desquamation takes place, the fever goes on and mania supervenes, soon ending in death. Headache during the eruption, and pleuritis and peritonitis subsequently, are very unfavorable symptoms. The treatment must be antiphlogistic, with small doses of calomel. Ablutions with warm water, mineral acids, cold applications, leeches, according to circumstances.

With its many variations, the eruption cannot be considered as an essential symptom of scarlet fever. It may suddenly disappear, without disturbing the course of the disease.

One of the most dangerous sequelæ is dropsy. It is rather of a torpid than inflammatory character, and is successfully treated by slightly aperient, hydragogue remedies, followed by tonics. For obstinate cases, the preparations of iron are true specifics. Tinctura ferri pomata, (Ph. Boruss.,) tincture of acetate of iron, or sesquioxide of iron, may be exhibited, first with diuretics, then alone.—(*Journal für Kinderkrankheiten.*)

XIII.—*Two Methods of Lithotomy performed in the same Patient.* By Prof. Guentner, of Salzburg.

R. R., a miner, aged forty-one, had symptoms of lithiasis five years since. Two years ago, several small concretions were voided with the urine. Examination with the catheter proved the existence of a hard, smooth body in the left side of the bladder. After performing the lateral operation, it was found impossible to extract the same, it being fixed in and firmly surrounded by a portion of the bladder which could not be reached. The patient made a rapid recovery, with the stone remaining in its place. Only a small part of it had been crushed with great exertion. A very annoying enuresis followed in a short time, with increase of the other troubles. Five weeks after the first operation, the high operation was executed. With some difficulty the concretion could now be removed; it formed a stone of an oblong shape, two inches nine lines long, and nearly two inches broad, weighing a little over three ounces, and consisting principally of uric acid. Some inflammation followed, but in eight days all the organs had resumed their normal functions; on the ninth day, the urine commenced to pass through the urethra; after the fifteenth not a drop of it appeared in the wound. Recovery, however, was slow this time, and it took sixty-four days to heal the external wound. Finally, however, the case terminated in complete recovery.—(*Wiener Medizinische Wochenschrift.*)

QUARTERLY REPORTS ON MEDICAL PROGRESS.

REPORT ON THE THEORY AND PRACTICE OF MEDICINE.

By Mark Blumenthal, M.D.

I. *Efficacy of Veratria in Articular Rheumatism.* By M. Bouchut. (Dublin Medical Press.)
II. *Treatment of Acute Inflammatory Rheumatism by Venesection.* By Prof. Piorry. (Gazette des Hôpitaux and Lancet, 1862.)
III. *Treatment of Acute Inflammatory Rheumatism.* By Dr. Thomas K. Chambers. (Lancet, November, 1862.)
IV. *The Supra-Renal Capsules—their Anatomy and Pathology.* By Prof. Harley. (Lancet, November, 1862.)
V. *The Value of Urinary Analysis in the Diagnosis and Treatment of Liver Diseases.* By Dr. Harley. (Lancet, November, 1862.)
VI. *On the Treatment of Pneumonia.* By Prof. James H. Bennett. (Lancet, November, 1862.)
VII. *On the Value of the Expectant Mode of Treatment in Pneumonia of Children.* By Dr. Barthez. (British and Foreign Med.-Chir., Nov., 1862, from Bull. Gén'l Thérapeut.)
VIII. *On the Treatment of Peritonitis by the Continuous Application of Cold to Abdomen.* By M. Behier. (British and Foreign Med.-Chir. Review.)

I. Veratria, already found of such great advantage in febrile and inflammatory diseases of various kinds, and likewise in so many diseases of infancy, is now again particularly lauded in acute inflammatory rheumatism. M. Bouchut relates (*Journ. de Méd. et de Chir.*) the case of a little girl aged twelve years, who suffered a most severe attack, the pains occupying the feet, knees and hips. On auscultation of the heart, systolic souffle was detected; the pulse was irregular, intermitting and frequent, (120;) the rheumatic affection involved, therefore, at the same time, the serous and muscular structures of the heart. M. Bouchut here employed veratria, guarded by opium, in order to make it more acceptable to the stomach. His favorite formula is to have one grain each of veratria and opium, made into ten pills, silvered over. One of the pills is given night and morning, on the first day, and the dose is increased by one pill every day, unless colics or vomiting supervene. The colics may in general be prevented by emollient enemas; but, should any untoward accidents occur notwithstanding this precaution, the medicine should be provisionally discontinued, or the dose for a few days decreased.

The first effect of the medicine is to abate the quickness of the pulse; and, as an arterial sedative, veratria is certainly superior to digitalis. In the course of a week, in the case above referred to, the pulse fell from 120 to 60—56 and 52. The pain at the same time subsided, and the swelling and redness disappeared. These effects were produced in less than a week, and merely by the exhibition of twenty pills, or two grains of veratria.

This, it appears, (*Dublin Medical Press, August* 13, 1862,) is the thirtieth case in illustration of the efficacy of this remedy M. Bouchut has met with in his practice, and is, therefore, especially deserving of notice. Sulphate of quinine may be as efficacious as veratria in the treatment of rheumatic fever, but the latter drug is less expensive, and less liable to induce complications. Sulphate of quinine has a tendency to induce cerebral metastasis; but were it only open to the objection of causing deafness, and, perhaps, amaurosis, this would be amply sufficient to justify a preference for veratria—a medicine easy of management, of insignificant pecuniary value, and any unfavorable action of which can easily be checked or averted.

II. The *Gazette des Hôpitaux*, August 23, 1862, contains an interesting case of a young man suffering from inflammatory rheumatism, admitted into La Charité, under the care of the celebrated Piorry. The joints most intensely affected were the right carpo-radial and tibio-tarsal, and both femoro-tibial; no effusion was found in these articulations; the tumefaction was considerable, the pain very great, and the heat extreme; the pulse full, strong, and bounding; the face and lips red, the tongue whitish; in fine, he presented all the symptoms of the inflammatory fevers of the authors. There was no cardiac complication, nor was any other organ found diseased. A venesection of nearly thirty-eight ounces was made. The blood presented a consistent clot, but no buffy coat, although the bleeding had been made from a large opening.

On the day of the bleeding but little improvement was felt, but the day thereafter the symptoms diminished, and then ceased entirely. Since then the patient has not suffered in any way, nor have any cardiac complications occurred.

It is rare, indeed, to see the symptoms of acute inflammatory rheumatism disappear so suddenly after venesection, but it is to be remembered that in this case hæmitis (excess of fibrin in blood) did not exist; and it is probably owing to this fact that the wonderful effect is to be ascribed.

"As regards a similar case," said M. Piorry, "which may present itself, it is important to determine beforehand if fibrin be held in suspension by the serum; unfortunately, this case proves that it is all but impossible to determine this before a bleeding, attended, as it was, by the signs of hæmitis, and yet this found *not* to exist. It was simply a case of blood plethora. At any rate, the history again proves the utility of bleeding in acute articular rheumatism."

III. Dr. Thos. K. Chambers, of St. Mary's Hospital, London, (*Lancet*, November, 1862,) gives the following method of treatment in acute inflammatory rheumatism, which recommends itself, not alone by the authority from whence it emanates, but equally so by its exceeding rationality, practicability and results. It were well, indeed, for our art, and better still for suffering humanity, if in all diseases we could so well reconcile theory and practice; if in the treatment of all we could always follow indications so well marked; and it is with this conviction of the great practical utility of Dr. Chambers' method, that we transcribe his rules, in the perfect assurance that, if followed by our readers, they will contribute much to the alleviation of pain, and the prevention of evil secondary effects, so often finally fatal. He says:

1. "The patients are bedded in a peculiar fashion. All linen is strictly forbidden to touch the skin; a slight calico shirt or shift may be allowed; but if they possess under-clothing only of the prohibited kind, they are better naked. Sheets are removed, and the body carefully wrapped in blankets, which are so arranged as to shut off all accidental draughts from the head. The newest and fluffiest blankets that can be got are used. The bed-clothes being put so, are kept so, and students are warned that when they listen to the sounds of the heart, they must not throw open the blankets, but insert their stethoscope (first warmed) between the folds.

2. The limbs, which are swollen, red, or painful, are wrapped up in flannels, soaked with a hot fomentation, consisting of decoction of poppy-heads, with half an ounce of carbonate of soda to each pint.

3. The following drugs are prescribed with a curative intention:

a. If the skin is red, swollen, and painful about the joints; if the cellular tissue around the muscles is infiltrated and sensitive, so that motion is impossible, or exquisitely painful—more especially if these phenomena are metastatic, leaving one part free and attacking another—then they get the alkaline treatment pure and simple; they have a scruple of bicarbonate of potash in camphor-water every other hour, night and day, when awake.

b. If the above-named phenomena are insignificant, and the pain is felt more in the bones,—if it is intensified rather by pressure, than by motion,—if it is fixed in one spot, and not metastatic, then I add two grains of iodide of potassium to each dose; and directly the symptoms have taken a turn towards alleviation, I leave off the alkali altogether, and give only the iodide.

4. Opium, as a palliative, is given in exact proportion to the degree of subjective sensation of pain. If one grain be not enough to entice sleep, a grain and a half is administered; if that do not avail, two grains. Directly the pain is better, the quantity of the drug is diminished. Nothing effects the desired object so well as pure opium.

5. If the pain remains fixed in one joint, instead of leaving it, as in other places, leeches are applied there, and the part is kept poulticed. When we can get them, young laurel leaves, bruised, are mixed with the poultice.

6. The latter statement is applicable also to the cardiac region, if the heart has become inflamed, either inside or out. The pain is taken as an indication of the extent to which the leeching is to be pushed, so soon as it is proved by auscultation that such pain arises from inflammation of the heart, and not from rheumatism of the pectoral muscles. The constant application of the poultice is made imperative.

7. The diet is varied in some degree, according to the antecedent circumstances of the patients. If they have been robust, hearty persons, before the attack, they will bear a good deal of starvation, and they are put on our "simple diet," to wit: bread and butter, gruel and tea, in quantities practically at discretion. If previously they have been ill-nourished, by reason of either ill-health or poverty, a pint of broth or beef-tea is added." In commenting upon these several items, the author enforces their utility by many reasons, and the

results of experience, and in regard to the temperature, declares that "it is impossible to exaggerate the importance of extreme repose, and an even, high temperature to the skin, in rheumatic fever. *It is worth all the other means put together.*" Since especial regard has been paid to this point, but *one* case of pericarditis occurred during eight or nine years, and that was doubtless "owing to exposure while taking mercury and opium."

"Rheumatic inflammation," says Dr. Chambers, "is an injury to nutrition, which is entirely compensated for by restored function." If kept perfectly still, it passes away, and leaves no after-sign, wound, or scar. But if, from ignorance or necessity, the parts are kept in motion, common inflammation is superadded. The pain and swelling become fixed, and no metastasis can take place. "The pain of rheumatism is a call to voluntary—absolute rest." Now in joints this is easily obtained, but with the heart it is different; this organ must be kept beating, at whatever cost, and the heart, accordingly, is well known to be fatally apt to be struck with common fibrinous inflammation, at all stages of the disease. Absolute rest being inconsistent with the continuance of life, it is desirable to make the nearest possible approach thereto. Simple rest and horizontal posture are not sufficient to this end; but an *even, high temperature are absolutely essential.* "Next to jumping and running, there is nothing gives the heart more work to do, than change of temperature." In proof of this, Dr. Chambers refers to the fact, that the accoucheur stimulates the heart's action, in asphyxiated or still-born infants *most*—by causing sudden changes of temperature—dashing cold water upon, and rubbing with dry, warm cloths, alternately the chest and neck, as the parts most powerfully sensitive to the changes. Now, what the accoucheur so much desires—the physician in treating rheumatic fever should be most anxious to avoid, namely—increased heart action, as this would tend to produce common inflammation, superadded to the rheumatic, and all the train of symptoms accompanying the cardiac complication.

The greatest caution should be used, in making the necessary stethoscopic examinations, not to expose the chest by forming the blanket into a tube and inserting the stethoscope, previously warmed through it. "As a student, I used to see many and many a case of pericarditis brought on by the careless way in which the chest was exposed in the daily stethoscopic examination."

The danger of having linen or cotton bed-clothes, which become saturated with perspiration, and then by exposure get cold and chill the skin, is also forcibly expressed, and a case adduced, in which relapse of the disease occurred during convalescence, followed by pericarditis.

With unimportant exceptions, Dr. Chambers has for the last seven years treated every patient on the alkaline plan, and, in the majority of cases, rapid relief begins with the commencement of the treatment; in a certain number, however, no effect is produced, even when the urine has been made alkaline. Some of these are gouty; a few, gonorrhœal rheumatism; "a disease allied to pyæmia, and requiring quite different treatment." Still, there are some cases where true rheumatic inflammation will not yield to the alkalies, and in these you will find the periosteum or perichondrium affected. Iodide of potassium is here to be substituted. Opium is used simply as an anæsthetic, and "there is no reason to suppose it either shortens or lengthens the disease." Leeches and poultices are demanded where common inflammation has supervened, and are particularly valuable in commencing cardiac complication. "From six to twelve leeches are applied at once; these usually relieve the pain somewhat, but if it returns again next day, they are freely repeated, again and again. The pain is the best indication of the acuteness of inflammation in serous membranes, and as long as acute inflammation lasts, leeches and poultices are the best remedies for it." The alkaline treatment is vigorously continued in this complication, and while "no advantage has been traced to mercury in this stage, opium is very proper in full doses, as it tends to control and lower the hurry of the circulation, which is so dangerous. Under its use, the pulse is diminished in frequency, sometimes even below the normal standard; and this must surely be an important object in a state induced by the continuous motion of the organ." Indeed, I am not sure that mercury does not dispose to pericarditis, by increasing the proportion of fibrin to the other constituents of the blood, "and is therefore contra-indicated."

The importance of instant action, whenever an abnormal murmur arouses suspicions, is forcibly impressed. "Lost minutes are more hurtful here than in any disease I know of." "It is better even to anticipate evil, than to be too late." Leeches or cups should alone be employed, to prevent, or at least diminish, the consequences of the inflammation.

With regard to diet, it is considered necessary to restrict the supply of nutriment. Meat especially seems to disagree, and its indulgence may produce a relapse. Vegetable food is less dangerous; rice pudding, porridge, gruel, bread, mashed potatoes, and so on, are recommended.

IV. Prof. Harley, of University College, London, has just made a valuable contribution to Medical Science by his Prize Essay " On the Anatomy and Physiology of the Supra-renal Capsules. As embodying all that is at present known regarding these organs, *The Lancet* (Am. Ed., Nov., '62,) gives the following summary:

1. The supra-renal capsules are not fœtal organs, but perform their function up to the latest period of life.

2. The supra-renal capsules are not absolutely essential to life. When removed artificially, or destroyed by disease, their function is vicariously performed by other "ductless glands," more especially by the thymus.

3. Young animals support the removal of the supra-renal capsules better than old ones, (probably on account of the greater activity of the thymus in early life.)

4. When only one capsule is extirpated, the other performs the double function.

5. A wounded capsule heals readily.

6. The supra-renal capsules are not marked by any great sensibility.

7. The removal of the right is more frequently attended with fatal results than removal of the left. The right is also much more liable to disease than the left. (Appendix.)

8. The lower animals are subject to disease of the supra-renal capsules.

9. When death follows upon the extirpation of the supra-renal capsules, in the majority of cases, it is in consequence of the injury done to their solar plexus.

10. The supra-renal capsules are richly supplied by blood-vessels as well as by nerves.

11. Their function is apparently intimately connected with the formation of the *red* blood-corpuscles.

The following conclusions are then drawn from a number of tables:

1st. That supra-renal capsular disease is two times and a half more frequent in males than in females.

2d. That it occurs with equal frequency above and below the age of thirty-five (35) years.

3d. That both capsules are (four times) more liable to be affected than only one.

4th. That the right capsule is much more liable (three times) to become diseased than the left.

5th. In diseased supra-renal capsules,

40 per cent. are affected with tubercle.
20 " " " cancer.
12 " " " fatty deposit.
12 " " " calcareous deposit.

6th. Males are more liable to be affected with bronzed skin (either with or without supra-renal capsular disease) than females, the proportion being as 3 to 1.

V. As a most interesting fact demonstrating the importance and never-to-be-overestimated advantages conferred upon medical diagnosis by the microscope, may be mentioned its use in obscure liver disease. Thanks to the untiring and profound researches of German and other pathologists, two diseases—one of them *always*, and the other very often, involved in doubt—have been rendered easier and more positive of diagnosis. Professor Harley, of Univ. Coll., London, says: "Every one must have met with cases of obscure hepatic disease, where the ordinary means of research (obtaining the size of liver by percussion, the absence of bile in stools, and the presence of biliary pigment in urine,) proved totally inadequate to their requirements. This circumstance has led to the search of further aids to diagnosis in such cases; and consequently, for the last few years valuable suggestions have fallen from different members of the profession both here and abroad. For example, Dr. Eiselt, of Prague, has called attention to the fact that in cases of melanotic cancer of the liver, the true nature of the affection may be sometimes discovered during life, by the presence of melanine in the patient's urine." (A specimen was shown by Dr. Harley.) "Urine containing melanine, although of the normal color when first passed, gradually becomes of a dark hue, even as dark as porter, when left for some hours exposed to the air. This change appears to be owing to a slow oxydation of the pigment."

In the second place, Dr. Frerichs states that two substances, tyrosine and leucine, which were formerly only known to the scientific chemist, are invariably to be found in the urine of patients laboring under acute or yellow atrophy of the liver. Dr. Harley had been able to verify this statement in the urine of a young married woman who died from this most fatal form of disease. He had also seen a case of chronic atrophy of the liver, the result of obstruction from disease of the pancreas, in the urine of which he found both tyrosine and leucine. As the disease advanced, the quantity of these abnormal ingredients increased. After death, crystals of tyrosine were found in the liver.

Dr. H. recommended that, in all cases of obscure liver disease, these substances should be looked for; and that, in the majority of cases, they were readily detected in the concentrated urine by the microscope. Tyrosine appears as needles and little stars; the leucine as round, yellow balls, some of which are occasionally spiculated.

Dr. Harley's method of distinguishing between jaundice arising from suppression, and jaundice the result of obstruction—two forms of disease so ably described by Dr. Budd—was then alluded to. Dr. H. believes that, in determining the presence of biliary acids in the urine in liver disease, sufficient attention had not been paid to the *kind* of jaundice under which the patient suffered. He believed that where bile acids occurred in the urine in any quantity, their presence might be regarded as the certain sign of some obstruction in the course, or at the termination, of the common bile-duct. His test for the bile acids is very simple, and consists in adding strong sulphuric acid and a small piece of white sugar to urine. The sulphuric acid is so added as not to mix with the urine; the sugar floated at their line of contact, and after some minutes assumed a purple hue. If no bile acids exist, the sugar is simply browned.—(*Am. Ed. Lancet*, Nov., 1862.)

Dr. Thudicum mentions another excellent test, which consists in adding a drachm of the solution of the nitrate of mercury to the urine; the urine being then boiled, the white precipitate produced would be transformed into a dark purple color, and the solution itself would assume a partly purple color.

VI. The treatment of inflammations and fevers of the present day, as compared with that pursued twenty years ago, has certainly undergone a most wonderful change. From the too energetic and active remedies then universally employed, the profession has receded completely, and now threatens to go to an equal extreme in the opposite direction. In no inflammatory disease has this change of practice become more marked and prevalent than in pneumonia, which, from being actively met in by-gone years by the entire army of antiphlogistics, that is to say, blood-letting, purgatives, antimonials, mercury and low diet, is now looked upon as best treated when least medicated, and most tenderly nursed. Among the eminent men who have insisted upon the abolition of the old practice, none stand out more boldly than Prof. Skoda, of Vienna, and Prof. J. Hughes Bennett, of

Edinburgh. "It was about eighteen years ago," says Dr. Bennett, "in consequence of investigating the pathology of inflammation, that I began to doubt the propriety of such a treatment, and for the following reasons: In the first place, the cause of the inflammation is an irritation of the textures, of the ultimate molecules of the part, in consequence of which, their vital power of selection is destroyed, and that of their attraction is increased. The removal of blood by venesection cannot alter this state of matters, neither can other lowering remedies. If the inflammation be superficial and limited, local bleeding may diminish the congestion, as in conjunctivitis; but if exudation has occurred, it cannot remove that.

In the second place, an exudation or true inflammation having occurred, it can only be absorbed by undergoing cell-transformation. Now this demands vital force or strength, and is arrested by weakness. Inflammations in healthy men rapidly go through their natural progress. In weak persons they are delayed or arrested, hence their fatality.

In the third place, the strong pulse, fever, and increased flow of blood in the neighborhood of inflamed parts, have been wrongly interpreted by practitioners. They are the results and not the causes of inflammation, and show that the economy is actively at work repairing the injury. So far, then, from being interfered with and interrupted, they should be supported by nutrients.

It follows, fourthly, that if these views be correct, the true treatment of inflammation should be directed towards bringing the disease to a favorable conclusion, by supporting rather than by diminishing, the vital strength of the economy; and this not by over-stimulation, as was done by Dr. Todd, but simply by attending to all those circumstances which restore the nutritive processes to a healthy condition.

Since fourteen years, Dr. Bennett's practice has been guided by these views, (which have already been, to a very general extent, adopted by the profession,) and he now brings forward 105 cases of pneumonia, treated by him in the Royal Infirmary of Edinburgh, and of which accurate records were kept by the several Clinical Clerks. The results were:

Single uncomplicated cases	58	Average	duration	13½ days.
Double " "	19	"	"	20 "
Complicated cases	17	"	"	15¾ "
Unsatisfactory cases (as to duration)	8			
Deaths	3			
	105			

Ratio of deaths, 1 in 35. Average residence in the hospital of 77 uncomplicated cases of pneumonia, (single and double,) 22⅛ days.

"In all these cases the treatment was directed to the support of the economy, *never* to weaken it by antiphlogistics. At the same time, if dyspnœa be urgent, cupping or a small bleeding (from 4 to 8 oz.) may be practiced as a palliative, more especially in bronchial or cardiac complications; although in *none* of these cases was such bleeding ever found necessary by him. During the febrile excitement, mild salines are ordered. On the fourth or fifth days, when the fever abates, good beef-tea and nutrients are administered; and on the pulse becoming soft or weak, from four to eight ounces of wine daily. As the period of crisis approaches, slight diuretics are given, to favor the excretory process."

From the facts above given, Dr. Bennett concludes:

1. That simple pneumonia, if treated so as to support instead of lower the nutritive processes, so far from being a fatal disease, almost invariably recovers.

2. That the cause of mortality in these cases is exhaustion either before they come under medical supervision, or, as formerly practiced, by a lowering treatment. Bleeding or other remedies, that do not exhaust, must be regarded as palliative rather than curative, and their influence has yet to be determined with exactitude.

3. That the same rule applies to all inflammations, the amount of danger being in direct ratio to the weakness of the system, the existence of complications in other viscera, or blood-poisoning.

Prof. Bennett does not believe that the above-stated results depend upon a change in the type of disease, or in a change of the nature of inflammation, or of the force of the pulse in man and animals; of an alteration in diet or drink; or that they were the effect of chance, but simply and solely ascribable to an advance in medical science." "He thought it strange that some minds would rather ascribe so manifest an improvement in the treatment of disease to hypothetical revolutions in nature, which had no proof in their support, than to the increase of knowledge amongst the profession, which is obvious to all."—(*Lancet*, Am. Ed., Nov., 1862.)

VII. In consequence of the mild nature of simple pneumonia, MM. Rilliet and Barthez, together with M. Legendre, have been in the habit of leaving the disease, in many cases, to its natural course. They believed that they would thus cure patients as well as by active treatment, and the results have justified their expectations. From August, 1854, to June, 1861—nearly seven years—M. Barthez has treated in the hospital 212 children with simple pneumonia, among whom he had but two deaths, and in these both lungs were affected. In half of these cases no active treatment was adopted; in many of the others only mild measures were recommended—such as an aperient, an emetic, and a bath; and about a sixth of the cases were subjected to somewhat active treatment. To this considerable number, M. Barthez adds several more, treated in private practice; so that he thinks he can determine the mildness of uncomplicated pneumonia in children, so far as the City of Paris is concerned, whatever may be the seasons, or years, or seat and extent of disease, and whatever the treatment, active, insignificant, or none at all. He makes a reservation, however, for double pneumonia, which is the only form he has seen terminate in death, in the proportion of 2 to 13. The patients particularly alluded to by M. Barthez were from 2 to 15 years of age. Before this latter age, simple hepatization is still most frequently cured, even when it is very extensive; but it has also been known to terminate in death. After 15 years and up to 20, M. Barthez also believes in the cure of the disease, so far as his recollection extends. On the other hand, the pneumonia he describes does not comprise all the inflammatory diseases of the lung, or the pneumonia which supervenes during the course of fevers, or that which accompanies tuberculosis.

The following are some of the general conclusions at which M. Barthez has arrived: "Pneumonia, when left to itself, begins to terminate in resolution from the sixth to the eighth day from its commencement, and a slight course of treatment makes no difference in its progress. Bleeding appears to be contra-indicated in this disease, and M. Barthez has remarked that several children who had lost blood were pale and emaciated during the whole period of a long convalescence. When resolution has once commenced, the disease is very rapidly terminated, and one day is sometimes sufficient for the purpose; but more generally it occupies from two to six days. The extent of the inflammation has great influence on the duration of the disease; thus, when it occupies the whole of the organ its progress is the most slow, and its duration the longest. All double pneumonia takes more time to resolve than the simple form. The conclusion which seems to M. Barthez to follow from his cases is, that in a child attacked by simple lobular hepatization, the best course is to adopt good hygienic measures, and to abstain from all active treatment, and especially from the repeated abstraction of blood, the evident effect of which is to weaken the patients unnecessarily, and considerably to protract their convalescence."

VIII. M. Behier, in a communication made to the Académie Impériale de Médicine, recommends the application of cold in cases of peritonitis. He relates several cases of metritis and metro-peritonitis, which he has seen rapidly cured by the continued irrigations of cold water on the abdomen. M. Behier, for this purpose, makes use of bladders of caoutchouc, filled with pounded ice, renewed every two hours. The first effect of this measure is the rapid diminution of Since October, 1858, 801 women have been confined at the Hôpital pain, which does not return unless the application of cold is interrupted. Beaujon, and of this number ice was applied in 355, of whom 244 presented only at the time of the application a swelling of the appendages of the uterus and light pain, which rapidly disappeared; in 68 others, the symptoms were more threatening, and there was a well-marked feverish excitement. Thirty-nine women died out of the whole number of those who were confined; but even in these cases there was some modification of the symptoms, for the duration of the disease was prolonged beyond that which it presented before the adoption of this mode of treatment. M. Behier therefore hopes that the plan may prove useful in the peritoneal inflammation of child-bed; and he adds, that he has never observed any bad symptoms to result from this application, which interrupts neither the lochial secretion, nor that of the milk.

The Italian Campaign of 1859—*Medico-Chirurgical Letters from General Head-Quarters.*

By Dr. A. Bertherand, Principal Medical Officer of the First Class, etc., etc. Translated for the American Medical Monthly.

LETTER VI.

Volta—Valeggio—Dezenzano—The Pellagra—Tetanus—The Curare.

To Dr. J. Ehrmann:

My Dear Friend—After a stay of forty-eight hours on the heights which overlook the little city of Volta, the time-stained walls of its dismantled fortifications, and the bell-tower of its *Parish Church*—whence one may see in the distance the four corner citadels of the famous *Quadrilateral*—our General Staff at last started on the road towards the Mincio. We crossed the river, narrow, but swift and deep, on the morning of July 11th, over flying arches of boats and trestles, at Borghetto, just at the foot of the majestic ruins of an old fortified bridge, which, in former days, defended this outlet of the valley, linking together the dungeon-keeps which sat proudly upon its scarped banks.

Borghetto, deserted and half in ashes, has been a second time ruined by the cruel treatment to which the rage of the routed Austrians has subjected it. Ten minutes farther, and a tolerably steep ascent brought us up to Valeggio.

We left only a few stragglers at Volta, as there was no hospital there except an old convent, which has been appropriated for the last few years for the lodgment of troops. After Solferino and Cavriana, the enemy, flying precipitately, had abandoned about three hundred and fifty of his wounded in these *Fatti* barracks, and we were obliged to establish a temporary medical service there under the direction of Assistant-Surgeon Major Widal, to afford assistance to these unfortunate men, as well as any of our own who might be foot-sore, or attacked with fever. These barracks are also at our disposal for the reception of patients whom the cantonment of large numbers of troops will necessarily concentrate in this neighborhood. None can foresee what occurrences the armistice may have in store for the French army. Even more poorly supplied than Volta, Valeggio has nothing but an insignificant *relief station*. The name of hospital can scarcely be given to a dozen mean beds standing in the lower rooms of a miserable hovel, reached by descending a number of steps into a subterranean basement.

The municipal authorities have, it is true, placed at the disposal of our ambulances the Church of San Rocco, an Oratory, and a good-sized house adjoining. But these places are difficult of access, and destitute of water and outhouses. We shall do well to transport our wounded, in a few days, from San Rocco to Borghetto. In that town there stands just opposite the head of the bridge, on the Valeggio side, a large four-story mansion, an old convent or seminary, which promises room for two hundred and fifty patients, while the chapel, still used for worship, might hold a hundred more. There are extensive sheds connected with it, and the Mincio is close at hand. Unfortunately all this establishment was in a most dilapidated condition, and principal Medical Director Leuret, who had been sent from Castiglione to take charge of affairs at Borghetto, may think himself happy that he has not been obliged to perfect so unpromising an organization.

The armistice of Villafranca and the preliminaries of peace having removed all pretext for hostile collisions, have left no subjects for surgical treatment, save a series of serious accidents which have accumulated under our very eyes during the past few days from the most inconceivable carelessness. In one case, an artilleryman playing with a comrade, was tripped up and fell directly under the train of his caisson. By a happy providence, the driver stopped his horses in time to prevent the wheel from passing over the limb. But the femur was already broken; the fracture was fortunately a simple one, and surgical assistance at hand. In another, a Voltigeur of the Guard cocked a pistol, by a blow of his fist, and without stopping to find out whether it was loaded, pulled the trigger, with the muzzle pointed towards his right hand. The weapon went off, and the ball ploughed along under the skin the whole length of the cubital border, from the pisiform bone to the first phalangeal articulation of the little finger, without injuring a single bone. On the way to Volta, a soldier of the 56th line regiment took it into his head to set fire to an Austrian shell with a chemical match. The projectile burst in the midst of the train behind us, killing the rash experimenter a few steps from M. Malaret, Adjutant Administrator of our ambulance.

I do not know whether I have described, in a former letter, the wound of a sapper of the Engineer Corps, whose hand was torn in a horrible manner by the explosion of a shell, which he unfortunately undertook to break with a hammer, in order to "see how it was made inside." It is impossible to give you an idea of the laceration of the fingers and the three last metacarpal bones. Suffice it to say that they hung to the palm only by shreds of skin; the first and second were somewhat more adherent, although dislocated upon the trapezius and trapezoid. It was, however, so important not to deprive the limb of all means of prehension, that I did not hesitate to preserve this thumb and index finger, bad as they were, as a sort of sentient forceps, which might hereafter do the poor cripple good service. The three last fingers were then cut off, as well as the base of the *os magnum*, which was found to be involved in the injury. I replaced the two first metacarpals as nearly as possible *in situ* on the *carpus*. Making the most of the strips of skin, and uniting them by interrupted sutures, the whole was brought into shape. The hand was elevated upon a *dressing pallet*, and subjected to continuous cold irrigation. At the expiration of three days he was sent on to Brescia, where the progress of the case continued satisfactory up to the 12th of July, at which time I ceased to have any news of it.

Certainly, my dear Ehrmann, this was a case in which authority could have been found for disarticulating the wrist; so, you see, our military surgery is not so ready with the knife as is the fashion to accuse it of being.

During the days of the 5th, 6th, and 7th, the heat of the atmosphere became really insupportable, causing a great number of entries at the hospital. The 5th Corps, which was to rally on Valeggio, lost thirty men on this terrible march, from the effects of the scorching sun. Nor were the privates, bending under the weight of knapsack, rations, gun, and cartridges, alone affected. A superior officer fell dead from his saddle, from congestion of the brain. At Valeggio, where the army was at rest, the want of occupation gave to the troops an opportunity to drink to excess of the miry water of the city wells, and the melted ice of the Mincio. Hence, gastric disorders, diarrhœa, and dysentery; the last, sometimes, of a grave form. To these we must add a number of individuals who were drowned, either from not knowing how to swim, swept away by the rapidity of the current and the eddies, or overcome by the cold, asphyxiated after a too abrupt or too prolonged immersion. It was with a feeling of extreme satisfaction that, on the 12th of July, we left the bivouacs of Valeggio in order to take up our quarters at Dezenzano, on the shores of Lake Guardo. The neighborhood of the mountains, and the presence of a large sheet of water, promised us a fresher air, and resources for both lodging and subsistence, of which we had been completely deprived for the last fortnight. The march along the Mincio to Mozembano was a gay one.

Turning here abruptly to the left, in order to reach the lake by way of Pozzolango and Revoltella, we could scarcely withdraw our eyes from the columns of smoke, which, rising above the yellow summits of the bastions, pointed out to us the fortified camp of Peschera. A mile or two further on, fresh mounds of earth, sprinkled with lime, upon the battle-field of the Piedmontese Army, again set us to thinking. Cavriana, Solferino, San Martino! souvenirs ye are, indeed, of glory and honor, but what irreparable sacrifices do ye bring to mind!

The Sardinian Army still counts nearly three hundred in the little hospital of Dezenzano, and its various dependencies. These are the wounded, whose injuries were too severe to admit of their being sent on to Brescia. Their condition is generally pretty good, although evidencing a chloro-anæmic character, which struck me as much in their general expression as in the somewhat doubtful appearance of the wounds. The Piedmontese soldiers, recruited at a younger age than our own, previously reduced by a less substantial diet, and less accustomed to war, necessarily suffered more than they, from the labors of so rapid and so vigorous a campaign. On the 14th of July, a proclamation from the Emperor of the French announced to the army the termination of its operations, and the commencement of its retreat to the interior of Lombardy. The day following, the General Head-Quarters were fixed at Brescia. Brescia, the principal point to which the wounded of the two allied armies were sent after Solferino, contained, on the 15th of July, 6,577 sick or wounded, distributed by nationality as follows: 2,830 Piedmontese, 3,172 French, and 575 Austrians. This immense total, which, indeed, had been on preceding days carried up to 8,000, had necessitated the occupation of all the available houses of any size in the city, to the number of thirty-nine, including colleges, schools, churches, and a goodly number of private mansions. Hence resulted a little crowding, especially in the churches, and in one ward of the civil hospital, where twenty patients were found packed together, some of them cases of amputation. The wounded were not the only ones to suffer from this state of things. We noticed, in the fever patients, a decided tendency to aggravation of the intestinal affections; and the words *typhus* and *hospital gangrene*, imprudently spread by alarmists, aroused apprehensions, which reached even to Milan.

In his extreme and constant anxiety for the troops which had just been placed under his command, his Excellency, Marshal Vaillant, thought it his duty to confer upon the subject with the Medical Inspector, M. Larrey.

I had just reached the General Head-Quarters when this excitement broke out. At the request of our honored Surgeon-in-Chief, I returned to Brescia. Visiting the hospitals, I collected myself, and with the assistance of my colleagues, MM. Isnard and Goze, all the documents which could aid me in forming an opinion, and addressed without delay to the authorities a report which gave to the facts their true signification. There had not been a trace of hospital gangrene, and as for the intestinal complications, the whole narrowed down to a few cases of saburral condition of the digestive passages, with a little general prostration, entirely natural in men fatigued by the campaign, whose energies and elasticity had just been relaxed by the proclamation of peace, and more than all, who had been completely used up by the overwhelming heat of the past fortnight.

Being more at leisure than during my former sojourns at Brescia, I resolved not to lose the opportunity of inquiring into a disease which is more particularly confined to this corner of Lombardy. I refer to the pellagra, that affection which, so obscure in its mode of progress, its causes and its origin, attacks each year not less than *twelve thousand* of the peasantry of Upper Italy, and whose mysterious history, in Europe, dates back only to the last few years of the past century. I certainly consider it by no means the least of my good fortune, in a medical way, in this glorious campaign, to have been able to observe, *with my own eyes*, the cutaneous eruption of the *Mal de la Rosa*, the indefinable sensation at the outset of the *Scotlatura di Sole*, and the capricious desquamation and colorless and deeply depressed cicatrization which characterize the concluding period of the disease.

An eye-witness to the digestive and nutritive disorders of the *scorbuto alpino*, of those invariable disturbances of the nervous system which pass successively from melancholy to delirium, imbecility, and suicide by drowning, (idromania,) I have come to understand the despair of science in its contest with the unconquerable difficulties of a pitiless disease.

It is a sad avowal, that despite the works of the Strambios, the Ballardini, the Franks, and the Briere de Boismonts, careful and sagacious observers, indefatigable and often ingenious investigators, the question of the pellagra, although conclusively treated by the erudite pen of Roussel, under the brilliant exterior of a simple and seductive theory—finally terminates, in whatever way it be considered, in the most disheartening negations. A little serum in the ventricles of the brain and spinal cord, a delicate arborization on the lobes or venous trunks; passive injection with thinning of the intestinal mucous membrane, and tenuity of the cellulo-muscular layer, but no trace of Peyer's patches, isolated follicles or ulcerations, will never sum up satisfactorily the pathological anatomy of an affection whose termination is either suicide or a slow, chronic typhoid fever, of a characteristic type, a true *typhus pellagra*, to make use of the expression of many of the native practitioners. Moreover, what are we to think of those cases, rare, to be sure, in which the disease having run an acute and rapid course, the most scrupulous autopsy reveals *absolutely nothing*? In an etiological point of view, the pretended coincidence of the appearance of the pellagra, with the introduction into Europe of an American grain, the maize, will not prove much, if we are allowed to suppose that in point of fact, the disease existed before it was described. Besides, is a connection found, as intimate as the hypothesis would compel us to suppose, between the two facts: the use of maize, and the appearance of the pellagra?

On the contrary, is it not to-day well established that this cutaneous affection is met, when maize is not at hand to account for its development; while on the other hand, it is happily unknown in certain regions where the culture of that cereal is extensively practiced? Nor has the influence of the *verderame*, a kind of blight, which is to Indian corn what ergot is to rye, been more successfully demonstrated.

As if by an excess of fatality, the pellagra, which has neither etiology nor pathological anatomy, has likewise no treatment. At Milan, as well as Brescia, they isolate pellagrous, as they used to leprous patients, in the close wards and narrow yards of the lower stories of the hospitals. But it may well be inquired, whether the baths and douches which they administer in view of certain lesions of the skin, or of the locomotive apparatus, ought really to be the last effort of a system of therapeutics, proportionate to the gravity of the disorders, of which I have only been able to give a very superficial sketch.

I have purposely cited above the considerable works, of which the pellagra has been the subject, on the part of Italian medicine. God forbid, then, that the slightest intention of reproaching our allied confrères with lukewarmness or indifference, in a matter which they have already examined so thoroughly, should be attributed to me! But, in the light of their knowledge and their patriotism, will not a disease, so balefully pernicious to their country, justify an appeal to one of those grand experiments, in which government should furnish the most powerful alteratives known to hygiene? Should not an effort be made to apply to the cure of this disease, favorable conditions akin to those which have been attended with so much advantage at the Abendberg, in Switzerland, in the removal of the cretins from the damp, dark recesses of the valleys, to the bracing atmosphere of the summits of the mountains? When the silence of analysis and of scientific investigation refuse to the inductive method a gleam of light by which to lay the foundation of a treatment, according to the dogmas of the schools, are we not permitted, dear brethren of Lombardy, to apply boldly to that other, not less fruitful source of our science, of which your great poet has said:

Esperienza,
Ch' esser suol fonte ai rìvi di vostr' arte!—Dante.

About thirty cases of tetanus occurred at Brescia after the battle of Solferino—all fatal. It is worthy of remark, that this terrible complication manifested itself almost exclusively in the churches, which had been transformed into hospitals. Independently of the unfavorable conditions of aeration in the lower strata of the atmosphere, in consequence of the light and air entering the naves only by means of very high, narrow openings, these places are distinguished above all others by the lowness of their temperature. The operation of this cause, usually reputed as very active in the production of tetanus, was here aggravated still more, by the fatal habit which the patients had of throwing off their bed-clothes, in order the better to enjoy the treacherous coolness. There is no question that churches, while recourse must be had to them as places of shelter for the wounded for the first few hours of confusion and haste, after the sanguinary shocks of war, cannot be occupied for any length of time without great risk. At Milan, where they were able to dispense with this kind of temporary accommodation, tetanus has attacked only five or six of our men. One cure has been recorded in the service of M. Gherini; Pirogoff's amputation failed to save a second case. At Turin three cases have appeared, and as I write the one topic of conversation around me is the success which has been met in one of them by means of the *curare*, administered by Dr. Vella.

Since the beautiful experiments of M. Claude Bernard, at the College of France, the instantaneous and powerful effects which this poison produces upon the motor nervous system have become well known. M. Vella, it appears, had succeeded by the use of the same agent in subduing the contractions occasioned by strychnia poisoning in animals. From this idea to that of employing the *curare* in traumatic tetanus, there was but a single step, and this step, we are assured, has just been successfully taken.

A sergeant, having had a gunshot wound in the foot which had healed, was making his arrangements to leave the hospital, when, all at once, unequivocal signs of tetanus declared themselves, affecting the entire body and threatening asphyxia, although treated most energetically according to the usual methods.

After consultation with M. Salleson, Surgeon-in-Chief of the Military Hospitals of Turin, M. Vella laid open the wound, and wet it with a solution of a grain and a half of *curare* to ten drachms of water. At the end of three-quarters of an hour the muscular contractions had disappeared, and the patient was master of all his movements, being able to get up, to talk, and to eat and drink with ease. The symptoms reappearing the next day, were checked in the same way by application of the above-mentioned solution to the wound, and also by the endermic administration of this substance.

Six times did the disease renew its attacks, and each time they ceased in from a half to three-quarters of an hour after the employment of the treatment. They then became less frequent, steadily diminishing in severity, until to-day the cure is complete. M. Vella will assuredly not fail to acquaint us, through the medium of the press or the Academy, with all the details of a case, the importance of whose results entitle it to be classed among the noblest discoveries of modern surgery.

I stop, my dear colleague, at this piece of good news. I have, however, still much to borrow from the notes which I make every morning in my visits to the Milan Hospital. I can perfectly understand your curiosity and that of those who will deign to read these lines, at the mention of the powder of MM. Corne and Demeaux. That is just the point at which I intend to commence my next letter. Not to disappoint you too completely, however, I will to-day simply tell you, without, be it understood, any reservation or subsequent explanation, that the powder works well. It does not *absorb*, at least so I think; it *disinfects*, perhaps. But unquestionably, either by itself or aided by other influences, it *beneficially modifies* the condition of suppurating surfaces.

MILAN, *August* 10*th*, 1859.

LETTER VII.

Hospital Gangrene at Milan—The Powder of MM. Corne and Demeaux—Empyema—Enterotomy—Osteitis after Amputation—Disappearance of a Projectile in the Pelvis—Consecutive Inflammation—The Tracks traversed by Balls.

To Dr. H. ZANDYCK:

My Dear Friend—An Italian sun has been pouring its most scorching rays upon us for five whole weeks, and nothing less, I assure you, than the pleasure and duty of having a word with you, could induce me at this moment to attempt to resist the oppressive and enervating heat, which so completely prostrates me. Still, the condition of the atmosphere is favorable to the yet numerous population of our hospitals. One or two cases of hospital gangrene at the *Maggiore*, five or six at *San Ambroggio*, and about twenty more among the Austrians gathered at *San Francesco*, constitute, if we except the anxiety incident to certain unusual injuries, the sole subject of medical interest at the present moment.

I have already said that *San Francesco* was an immense barrack, converted into a temporary hospital, at the time of our entry into Milan. Constructed, sixty years ago, on plans decreed by Napoleon, for the purpose of quartering an important garrison, this magnificent edifice answers but very imperfectly, it is thought, the hygienic *desiderata* of its new character. But a similar local predisposition does not exist at *San Ambroggio*, and yet hospital gangrene has attacked six privates or non-commissioned officers, in that building. It is difficult then to assign, in this case, any other causes than those arising from a slight crowding, depression of the system from insufficiency of air or food, and in some cases, carelessness in the application or reremoval of dressings. I should add, too, certain moral influences.

However that may be, when, after the appeal made by the honorable Professor of the Faculty of Paris, M. Velpeau, to his colleague in the Institute, Marshal Vaillant, the topical remedy of MM. Corne and Demeaux was introduced by the Surgeon-in-Chief of the army to the notice of our French and Lombard brethren in the Milan hospitals, experiments were zealously set on foot in those wards in which it was to be feared that the disease might assume the proportions of an epidemic. The patients affected were separated and isolated. Especial precautions for ventilation, cleanliness, the removal of linen, and of the water used in dressings, &c., were enjoined. Assistant Surgeons-Major were detailed for the special duty of enforcing these orders, and at the same time directing the application of the remedy, extemporaneously prepared for the occasion, according to the suggestions of M. Velpeau, by the Central Pharmacy of the General Head-Quarters of the army. I have followed my colleague, Dr. Cuveillier, with scrupulous exactness, in the investigations which he is commissioned to make and publish, in this most interesting department of surgical therapeutics; you know already the tendency of my views on this question, from the expressions made use of at the close of my last letter. But first, let me call upon our *confrère* and friend, Dr. Martenot, of Cordova, Surgeon-Major of the first class, detailed for the treatment of the Austrian prisoners of *San Francesco*, and who has been so obliging as to furnish me the following notes:

"Experiments made under my own eyes, in very advanced cases of hospital gangrene, foreshadow the future in store for the preparation of MM. Corne and Demeaux, and the hopes which the trials which have been undertaken seem to justify, although a final decision cannot yet be pronounced upon a discovery of such importance. After employing it most faithfully for ten days, a very evident amelioration in the condition of suppurating wounds, a radical alteration in their surfaces was everywhere noticed. A few of the more stubborn still show points of ulceration, which obstinately resist every mode of treatment; but their general appearance is better, and cicatrization is progressing visibly in those parts which have been cleansed by sloughing.

"At the commencement of the treatment, it seemed advisable to me to employ the pomade, as directed. If that did not suffice, I powdered the wound and the parts of the dressing which were in contact with it, with the pulverulent mixture. In those very extensive ulcerations which secrete an abundance of pus, it is indispensably necessary to apply thick pledgets of lint, in order to absorb the secretion and prevent the deleterious effects of its remaining on the denuded surfaces. In these cases, the dressings should be renewed two or three times in the twenty-four hours, for the reason that the suppuration, to some extent, removes the remedial agent from the surface on which it is intended to act; if this care be not taken, its action, in place of being permanent, will only prove very transient.

"When, on the contrary, as appears to me to be the rule, the wound takes on a better appearance, the dressing is modified, alternating the pomade with the powder; and as soon as it is supposed that there is no longer reason for employing the mixture of plaster and coal-tar, the customary dressing is substituted.

"Above all, in my opinion, is it necessary to insist upon local and general sanitary measures, the hygiene of the atmosphere and the food, not forgetting that of the emotional nature. . . . . "

I believe with M. Martenot in the high utility of these general elements of treatment in hospital gangrene; and I note, as having greatly contributed to its arrest among the Austrian prisoners:

1st. The removal of the wounded from *San Francesco* to the Convent of La Canonica, which opens to a great extent on the Bastion, and the fallow land which borders it, from the *Porta Orientale* to the *Porta Nuova.*

2nd. The substitution of a generous diet, roast meat and red wine, for the necessarily depressing *régime* of Italian medication, whose marked predilection for blood-letting and prolonged abstinence, in view of the dread phantom of inflammation we have already noted.

If we add, that the wounded of *San Francesco*, treated at first by the Austrian physicians, themselves prisoners, and, like their patients, a prey to the gloomy reflections of captivity; and then, after the liberation of their fellow-countrymen, intrusted at once to the care of Lombard physicians—had thus received from the beginning only the assistance of men dispirited and discouraged by defeat, and later that of their old adversaries—always objects of suspicion to the vanquished—can we fail to place a high estimate upon the favorable impression made upon their moral sense, when they saw the French physicians approaching them—whom they knew to be disinterested participants in a contest in which honor alone had for the moment enlisted them, with no suppressed desire for vengeance stimulated by the rancor of national animosity?

Thus it was that, from the moment that these victims of war began to receive from French physicians—without reserve or distrust, as without painful recurrence to their recent disasters—assistance and encouragement, with a degree of attention increased by the interest felt in these new experiments by the illustrious men both of the Surgical Department and of the Army, we saw—what might easily be anticipated—their spirits returning, and their appetites, with all their functions, aroused from the profound torpor into which they were insensibly sinking. Is it astonishing that, in consequence of so complete a change in their condition, often testified by expressions of the deepest gratitude, their wounds should suddenly have assumed a better appearance? Are we necessarily compelled to attribute the entire improvement to the application of MM. Corne and Demeaux's remedy? Such, I frankly confess, is not my view of the case.

"The powder works well"—so I wrote, scarce a week since, to Dr. J. Ehrmann—"either by itself, or aided by other influences, it beneficially modifies the condition of suppurating surfaces." I leave to you, my dear friend, and to any who shall be kind enough to stop to read the preceding details, the task of determining what part of the credit belongs to the mixture and what to its important auxiliaries. As far as concerns the first, I will tell you what I have seen.

Generally, at the moment of removing the bandages, a wound which has been treated in this way exhibits a marked tendency to detersion. The diminution of pus has never seemed to be immediately perceptible, which forbids any idea of active absorption by the plaster and coal-tar. It has rather appeared to me to take place only in proportion to the progress of separation, and to keep pace with the development of those luxuriant granulations, which must always be the essential condition of a laudable and normal secretion. Up to that point, the pus, imprisoned between the wound and the cement formed by the powder or pomade on the first pieces of linen, collected so abundantly, that it poured out like fluid from a vessel, the moment that the dressing was raised.

This accumulation of pus was sometimes so painful, that the patients entreated to have the dressing renewed every hour. I saw two, who were excited to such a degree by the suffering, that they could bear nothing whatever on their wounds. Others wept at the very thought of a fresh application of the powder, although much delighted with their first trial of it. In several cases which were thus improved at first, M. Martenot soon observed the reappearance of points of ulceration, which, so far from yielding to the treatment, seemed to tend to renewed ravages of the disease. Such was the case of a poor Austrian private, in whom the entire superior brachial region was eaten away by gangrene, so that the sheaths of the vessels could be seen, almost denuded, and threatening rupture. Death from exhaustion alone forestalled the imminent danger from hæmorrhage. During the last day or two, in another case, the femoral artery was reached by a large ulceration occupying almost the whole of Scarpa's triangle, and gave way at the time of dressing. M. Martenot was happily present, and succeeded in ligating the vessel, below the crural ring, and thus saving, temporarily at least, the life of the patient.

It is very true that the powder spread over the surface of a fœtid, putrescent wound, at once neutralizes its nauseous *sui generis* odor; but does it not act purely and simply as an impermeable coating to the orifices whence the odor is disengaged, a true and complete barrier interposed between the exhalant surfaces and the olfactory papillæ of the observer ? I am led to believe that the so-called absorbent or disinfectant action on putrid gases attributed to the mixture, is limited to this, from the fact that the fœtor at once returns, if only time be given for the pus to infiltrate the pulverulent layer which, instead of destroying their origin, merely masks the emanations. Permit me now, my dear friend, a few words with regard to a number of serious or particularly remarkable cases of gunshot wounds in course of treatment in our hospitals or the infirmaries connected with them.

In the dwelling—at once an elegant mansion and a most curious museum—of the Marquis of C. B——, the Du Sommerard of Milan, a young officer of the infantry *Chasseurs*, having a penetrating wound of the chest, was seized with consecutive pleuro-pneumonia, with considerable effusion. Availing himself of the able contributions of Baudens and Ledillot, on the expediency of inducing *empyema*, Dr. Cotta performed with success an operation, the final results of which it is impossible, in the present enfeebled condition of the patient, to predict, but which at least deserves the credit of having removed the immediate danger of a fatal termination.

At the Maggiore Hospital, Professor Gherini has recently applied, without bad consequences as yet, Dupuytren's *enterotome*, in the case of a Zouave wounded at Melegnano, and having an artificial anus.

One spur of intestine has already been removed, and on the fifth day substances eaten with great care (a little chocolate) were not vomited. Defecation had begun. A second application of the screw will take place to-morrow; may it be equally successful, and thus sanction legitimate hopes for the future of the operation.

Inflammation of the ends of the bones in amputated stumps is a complication, the frequency and danger of which I have noticed too often not to give you the benefit of the reflections that it has suggested to me. The spongy portions of the bone are more subject to it than the *diaphyses* where the compact tissue predominates; at least, out of twenty cases occurring in my own practice, I can count sixteen of the leg amputated at its superior fourth, and but four of the humerus, sawed through at the surgical neck.

It does not appear to me that the manner of cicatrization or the mode of dressing have any direct influence on the production of this osteitis, as I have often seen it appear in stumps which have healed rapidly and by first intention, with fleshy and regular flaps.

Independently of the predisposition which I really think exists in a great proportion of cases in the site of the operation, I am inclined to admit a special condition of the osseous system, resulting from anterior morbid states of the economy, and attended with serious injury to it.

Such were the antecedents of, 1st, Commandant F., of the Second Regiment Zouaves, a vigorous and energetic soldier, but prematurely worn out by numerous campaigns, and repeated attacks of fever in Africa and the Crimea; this officer had had his leg amputated, with great skill, a little above the place of election, by principal Medical Director Cuveillier: 2d, a young sub-lieutenant, of Polish extraction, whose arm was amputated by Dr. Trezzi, and who, but just arrived with the foreign legion, from the southern part of the Province of Oran, was still laboring under the effects of the paludal cachexy of Algeria.

The phenomena, in these sad cases, commence and succeed each other in this order:

A slight chill, a certain degree of *malaise* usher in the scene; suddenly the wound, on the point of completely closing, puffs up, its lips become everted, and a sanious ichor trickles from it; the stump becomes hot and painful. Sleep is banished, the nervous excitement increases, even to the point of delirium. Absorption progresses the more rapidly, because in a confined locality; diarrhœa supervenes with colliquative sweats, and then a burning and continuous fever; the result may be divined without difficulty.

The most energetic remedies, mercurial frictions, free incisions, blisters, cauteries, are almost invariably of no avail.

M. G., at the *Casa Melsi*, has a circular wound in the lower abdominal region, a short distance above the symphysis of the pubis. It is corrugated from the circumference towards the centre, thus indicating the passage of a ball, but there is no symptom of intestinal injury or of peritonitis, nor in six weeks have the usual effects of the presence of a foreign body in the abdomen made their appearance. This almost led to the belief that the projectile had not entered.

Meanwhile, the wound does not heal, and gives issue from the middle of its disk to a small quantity of serous pus. At times, there is a febrile movement; the flow of urine is not always as abundant or regular as natural, and the intermissions coincide with peculiar sensations of weight about the anus. Proposing to explore the hypogastrium, I succeeded, not without some difficulty, in passing a curved metallic sound, to a considerable depth, along a nearly vertical track, back of the pubic symphysis to the level of the neck of the bladder, (?) or to the borders of the prostate. Of course I do not pretend to determine more precisely the termination of a course so imperfectly recognizable, both from its situation and from the devious and irregular path which the ball may have followed. The demonstration that we have given explains at once how the peritoneum and intestines had the good fortune to escape the dangers which so impendingly threatened them. What will finally become of the foreign body? Must we dread a pelvic abscess, or may we hope for its inclosure and encystment, or for its spontaneous exit, by means of an inflammatory process, manifesting itself towards the perineum, and to whose aid art may venture to a certain point?

At the *Casa Gonfalonieri*, Colonel L. offers an example of the consecutive phenomena which, in the case of those narrow sinuses, in the long tracks produced by balls, nearly always interfere with and impede the process of cicatrization, though begun under the most favorable circumstances. This officer had his back traversed from shoulder to shoulder by a ball, which, without involving the respiratory cavity, fractured a portion of the spine of the left scapula, and the spinous apophysis of the next to the last cervical vertebra. Scraps of bone and clothing, and a few dead fragments of the aponeuroses through which the projectile passed, have accidentally caused the formation of a deep sinus, the existence of which is revealed by the discharge of a fœtid, greenish pus, occasional rigors, and stiffness and pain in moving the head. Counter-openings were at once made, but with incomplete success; the remarkably valvular arrangement of the muscles of the nucha and back evidently favors the burrowing of pus in those localities. My advice was, to pass a fine seton. M. Cuveillier inclines to the introduction of a drainage-tube. This is certainly an excellent opportunity for trying the ingenious method of Professor Chassaignac.

Colonel L. has for a neighbor, Commandant S. R., of the Engineers, struck in the leg by a ball, at Melegnano, on the 8th of June—two months ago already! The bullet passed through the interosseous space, a little above the middle of the limb. The bones were not broken. The wound, not being a long one, was easily cleansed at first; but, despite five or six free incisions, suppuration continues, with a most disheartening obstinacy. The deep-seated and extreme sensibility of the part leads me to suspect an inflammatory process, or even a periosteal exfoliation of the tibia or fibula.

It is time, my dear friend, to break off this chronicle, in which I feel I forget myself with a frequency which would be irksome to an affection less indulgent and less tried than your own. Have not these studies in military surgery, towards which your earliest medical aspirations were directed, compensated for their lack of interest, by recalling to you, with some degree of emotion, the memories already distant, but still dear, of our life together with the ambulances of the army of Africa, in 1840 and 1841?

Let me hope so, and still call myself ——.

MILAN, *Aug.* 15*th*, 1859.

REVIEWS AND BIBLIOGRAPHY.

Selected Monographs: CZERMAK *on the Practical Uses of the Laryngoscope;* DUSCH *on Thrombosis of the Cerebral Sinuses;* SCHRŒDER VAN DER KOLK *on Atrophy of the Brain;* RADICKE *on the Application of Statistics to Medical Inquiries;* ESMARCH *on the Uses of Cold in Surgical Practice.* The New Sydenham Society. London: 1861. 8vo, pp. 329.

The five monographs here recounted may be more or less familiar already to most of our readers. The intrinsic value of each is such, that really the bare announcement of their having been translated into English, and published in one handsome volume, seems to us sufficient to insure an increasing demand for the "New Sydenham Society's" books.

Czermak's essay is especially interesting, as being the first monograph on its subject ever written. It kept alive and blew into an illuminating flame the sparks previously diffused by the author and others. It greatly widened the circle of application of laryngoscopy, and led to its improvement in many directions, winning new friends and fellow-workers for this important means of exact investigation. Historically, therefore, as well as intrinsically, it is a valuable essay.

The present writer, specially devoting his attention to the diagnosis and treatment of diseases of the throat by means of the laryngoscope, will probably soon present a full article on the subject to the readers of the Monthly. On the present occasion, he does little more than reproduce and join together a few extracts from the work under notice, sufficient to give the reader an idea of this comparatively new Auxiliary in Medicine.

Laryngoscopy is a term employed to denote the method rendering the larynx and neighboring parts accessible to view in the living subject. The principle on which it is founded is exceedingly simple. "A small, flat mirror, with a long stem, previously warmed, to prevent its being tarnished by the breath, is introduced into the mouth, widely open, as far as its back part. It is then held up in such a manner as to permit the rays to penetrate it, on the one hand, and consequently to illuminate those parts which it is desirable to examine; and on the other hand, the image of those parts is reflected into the eye of the observer. It is understood that the objects reflected are reversed; and consequently the right vocal cord appears on the left side, in the same manner as the right hand of any person placed before a looking-glass, is found to be on the left side of the figure."

"When a person wishes to examine himself, it is requisite to employ a second flat mirror, according to Garcia, which reflects the image of the subjacent parts represented by the laryngeal mirror. This image, twice repeated, is symmetrical, according to the nature of the object; thus the right vocal cord appears to the right, and so on."

The satisfaction at beholding, in living working order, organs thus before veiled from mortal eyes, must be experienced to be understood. As to the recognition and treatment of morbid conditions, the laryngoscope deserves an honorable place among medical appliances. As might have been predicted, it has already been overvalued by a few, and undervalued by the many. It is a mistaken notion that it must take the place of other means, but it is a far greater mistake to deny it a place, and a very prominent one, among our instrumental aids. Making all due allowances for the great tact, ability, and knowledge possibly acquired by a long experience with laryngeal diseases, with the aid of all other means of diognosis, except the laryngoscope—the difference between him who uses, and him who does not use the instrument, still is, in many affections, the difference between him who endeavors to grope his way in the gloom of the darkest night, and him who walks securely under the light of the effulgent sun. Furthermore, in local treatment, with it, *we see what we do;* it enables us to confine medication to any precise spot desired, and, more wonderful, to *remove* PER VIAS NATURALES, *morbid growths from even below the true vocal cords by means of cutting instruments, without the bloody laying open of the laryngeal cavity from without!*

Our author concludes the chapter from which we have already quoted thus: "Nevertheless, in spite of the simplicity of the principle, many obstacles and difficulties present themselves against the advantageous employment of the laryngoscope, and its correct appreciation by physiologists and physicians. Even actually notwithstanding the numerous proofs of its application, many persons become discouraged after certain fruitless attempts, as did my predecessors up to the time of Garcia.

"These difficulties and obstacles result in part from the excitability, sometimes very considerable, at the back part of the mouth, on its coming into contact with a foreign body; from the difficulty which many persons experience in opening their mouths wide enough, and of mastering the movements of the tongue; also from the conformation and unfavorable disposition of organs; and, in fine, chiefly *from the inexperience and awkwardness of the investigator.*

"The introduction of the mirror with facility and confidence, and consequently without any unusual excitement of the back part of the mouth; its prompt application to the most favorable and least sensitive spot; the habit of detecting and recognizing the reflected image, particularly of those regions but little known, and when the parts are movable; the directions to be given to the individual undergoing examination, to perform certain movements, and to assume the attitude necessary to the most favorable arrangement of the various parts of the mouth and pharynx; in fine, the regulation of the light, and of the visual direction;—all these circumstances require a degree of practice and dexterity which can be attained only by *great perseverance,* conjoined with some preliminary knowledge, and some amount of natural skill.

"These circumstances will always be very grave obstacles for the beginner, and will cause those physicians to hesitate in the employment of the laryngoscope who do not intend to make a *specialty* of laryngoscopy.

"Many other methods of examination, however, offer the same difficulties at the commencement, but these do not in the least detract from their value; as an instance, I shall here cite the ophthalmoscope, which certain persons only have learned to use with success."

Dusch's paper is a very ably drawn up account of all the cases (58) of formation of thrombi in the sinuses of the brain, which it was possible for him to collect. The first case detailed is one that had come under his own observation, and which led him to investigate the subject. The results arrived at, briefly summed up, are as follows:

Thrombosis of the sinuses of the brain is either an extension from the neighboring veins, or it originates primarily in the sinus.

A. *Thrombosis of the sinuses by extension* is the consequence,

I. Of processes of inflammation tending to necrosis, and sanies in the vascular precincts of the sinus. (These consist chiefly in caries of the bones of the skull; caries of the petrous bone, from internal ostitis, being most frequent.)

II. Of injuries of the bones of the skull; inasmuch as the hæmorrhage from the diploë which follows them leads to coagulation, (hæmorrhagic thrombosis.)

III. Of effusions of blood into the substance of the brain or its membranes, from which the thrombus extends through the smaller veins into the sinuses, (hæmorrhagic thrombosis.)

This form of thrombosis is characterized by the situation of the thrombus in the sinus (generally azygous) nearest to the cause; by the more advanced softening of the thrombus; by changes in the walls of the sinus; by inflammation in the brain and its membranes; and by metastatic processes in other organs.

B. *Thrombosis originating primarily in the sinus*, is the consequence—

1. Of influences which retard the current of the blood. In the generality of cases, several causes act simultaneously in this direction, partly of a general, partly of a local character.

1. General causes retarding the current of the blood, are—

a. Deficient energy of the heart's action.

α. In advanced age, (marasmus senilis.) Diminished elasticity of the coats of the arteries must here be taken into account as a favoring element.

β. In infancy, (marasmus infantilis.)

γ. In consequence of precedent acute or chronic diseases.

b. Diminution of the quantity of the blood. The effect of this in retarding the circulation manifests itself chiefly in the sinuses of the brain. (It is generally associated with the causes mentioned under *a.*)

a. Direct retardation from losses of blood.

β. Indirect retardation from profuse secretions, in which cases a certain allowance must be made for the inspissation of the blood, (diarrhœa and cholera infantum, profuse suppuration.)

c. Impediments to the expansion of the lungs, which prevent the right side of the heart from emptying itself properly. These impediments exist partly in the lungs themselves, (pneumonia, atalectasis, tuberculosis;) partly in the pleura, (pleuritic effusion;) or result from deficient action of the respiratory muscles, (in rickets, ascites, peritonitis.) Alone they do not appear to produce a thrombosis in the sinuses, but they must be regarded as very powerful auxiliaries.

The thrombosis which results from the causes mentioned under B, I, 1, acting, for the most part, in combination, (thrombosis from marasmus,) is characterized by the situation of the thrombus most frequently in one of the azygous sinuses, (the superior longitudinal or straight sinus;) by its firmness; by the non-existence of disease in the walls of the sinus; by consecutive hæmorrhages in the brain and its membranes; and by the absence or very unfrequent occurrence of metastatic processes in other organs.

2. Local causes which retard the circulation in the sinuses, are—

a. Pressure upon the sinus itself by tumors and enlarged Pacchionian glands.

b. Pressure upon the large veins of the neck by tumors, in consequence of which coagulation occurs first in them, and by extension of the thrombus, also in the sinuses. (*This comes, properly speaking, under* A.)

c. Intrusion of foreign bodies and tumors into the sinus, which diminish its calibre; here contact of the blood with the foreign body must be taken into account as favoring coagulation.

II. Of disease of the walls of the sinus, from altered molecular attraction between the diseased walls and the blood, especially in inflammatory processes in the former.(?)

Schrœder Van der Kolb relates, and comments upon, an exceedingly interesting case of atrophy of the left hemisphere of the brain, with coexistent atrophy of the right side of the body: we call this case exceedingly interesting, on account of the accuracy and minuteness of the post-mortem examination and analysis of the question as to the influence of the brain and spinal cord not only upon sensation and motion, but particularly also upon nutrition, growth and functional activity of the rest of the body. The case is illustrated with four lithographed plates.

Radicke's paper claims authority "in stemming the stream of baseless, and, to a great extent, erroneous, doctrines which daily threaten to overwhelm medical science." The author proposes, "as one who is acquainted with mathematics and physics, to whose province the treatment of questions of this kind belongs, to provide medical men with a ready test by which they may themselves try the accuracy of the conclusions at which they may arrive." The defect in the processes hitherto employed in the investigations respecting the metamorphosis of tissue and other physiological and medical inquiries consists, according to him, in the want of a clear perception of the import and value of Arithmetic Means, and, as a consequence, in attributing to them an importance which, in applications of this kind, they do not really possess. He admits he cannot promise to give an absolutely unvarying and accurate test, since such does not, and probably never can, exist; but he furnishes a test which he himself considers a sufficient one in investigations of this kind; one on which his requirements are based, and which is to enable even "medical readers not proficient in mathematics to deal with any observations in such a manner as to obtain certain results." He commences with treating of Means or Average Values in general, lucidly explains the distinctions between arithmetic, geometric, harmonic, and quadratic Means, and, returning to Arithmetic Means as those which interest us most, discusses in full detail whether and to what extent they exhibit what, in the cases under consideration, they ought to represent, and how far they are applicable to the comparison for which they are employed. So far as the cases are concerned in which the Arithmetic Means may be employed, this latter may represent either a pure average, or the probable value of a definite and fixed quantity, or the probable value of a variable quantity estimated in its mean condition. In the first case we have to do with *several* numbers of *definite* value; the numbers from which the Mean is deduced are regarded as exact, and are either independent of one another, or their dependence, if such exist, is not taken into consideration. In the second case, only a *single* number is involved, which has to be determined from several which are of *indefinite* value; here the conjectural reliability of the mean value depends upon the two circumstances, (1) that in each of the different numbers the error in one direction does not probably exceed that in the other, and (2) that the numbers are sufficiently numerous. In the third case, we have the same conditions as in the second, with the exception that the single number to be determined indicates, not a definite, fixed quantity, but a *variable* one. Now, medical investigations deal with Means belonging chiefly to the third category; hence it is requisite accurately to appreciate the degree of uncertainty or fluctuation of the individual numbers obtained, and to estimate the probable value of the Mean with reference to that degree of uncertainty. For this purpose, the following rules are given as applicable: The Mean required is obtained by taking the certain figures which a consideration of the "Successive Means" present, and by adding to them as the succeeding figure the Arithmetic Mean of the first uncertain figures, taken from an aggregate of so many of the last successive means as the given case shows to be desirable. The greatest divergence in the numbers of this aggregate from the mean found is *the measure of uncertainty.* If we have to compare the means of numerous complete series of observations of variable quantities, we are then only justified in concluding that an increase has occurred on one side, if the difference of the means is greater than the double of the greatest error of observation; *i. e., if it is greater than the sum of the uncertainties of these Means.* In the cases in which the mean difference is less than the sum of the mean fluctuations, but greater than its half, the result which the mean numbers give should be assumed to be "conditionally reliable," though its employment should be suspended until other investigations, undertaken with the view of ascertaining the same point, shall have given concordant results of at least equal reliability.

This paper has been sharply attacked—at the same time that its scope is warmly commended—by several eminent medical observers.

The two main objections made are as follows:

(1.) Says Dr. Beneke: "I must, at the outset, call in question the competency of mathematicians and physicists as authoritative critics of medical and physiologico-chemical matters, unless they are themselves to a certain extent physiologists." And again: "It is possible—and I wish and hope that it may be so—that the advice of Prof. Radicke may be the means of communicating to our results a greater accuracy than they have hitherto often had, and that they may obviate hasty and decided generalizations. But I also think that the physiologist as well as the medical man will look upon all the numerical values connected with these investigations as only approximately correct, and that the most careful estimate of probabilities will not rectify the numbers if proper physiological considerations have been deficient, or if careful manipulation and processes were not adopted in obtaining them. The valuation of the numbers—the determination of their arithmetic mean—must also always precede the examination of them which the experimenter should make; and it is requisite that the experimenter, as well as every one who attempts to criticise them, should possess sufficient acquaintance with physiology in order to estimate them at their absolute value, as well as to test the greater or lesser probability of accuracy which they possess. The mathematician, as such, cannot do this, and however accurately he may determine the mean of a given series of numbers, he works with quantities he himself cannot estimate; and he may in the end evolve a result as mathematically correct, which is probably altogether false, in consequence of its being founded upon individual observations which are faulty."

(2.) Prof. Vierordt argues, "that in addition to the purely formal and mathematically convincing logic of the calculus of probabilities, there is, *in many cases*, a logic of facts, which, when applied in the proper manner and in the proper place, (*i. e.*, to questions that are not too complex,) carries with it, for the man who is acquainted with his subject, a small, or it may be, a very high degree of conviction."

To both of these objections, and to others, Radicke has replied, he justifies the stringency of his rules with the necessity that he feels of a *rather high degree of certainty*, "because such large superstructures are erected on physiological and pharmacological conclusions; and because new theories, or perhaps new methods of treatment, may be founded upon these conclusions, whose effect, both upon science and practice, is restricted in proportion as those theories are considered to be well founded, whilst it is too easily forgotten that they are based upon data that are only more or less *probable*, rather than *certain*."

In our opinion, these rules are by no means free from objections which constitute, perhaps, insurmountable obstacles in the way of their practical application in the cases most requiring them, but their study is so instructive that we cannot too earnestly recommend to our readers to study them in greater detail than we have been able to present them. We regard feasible attempts to "mathematicize"—if we may be allowed such an expression—medical inquiries, and thereby to render medical science more exact, as exceedingly desirable; and also agree with Dr. Bond, the translator of Radicke's Essay, in considering statistics a most effective instrument of research when rightly used; but like other edged tools in unskillful hands, they are as likely to do hurt as good.

Esmarch, believing that of all remedies at our command in the treatment of inflammatory processes, cold is the most important, avows that without this remedy he "would rather not be a surgeon."

The chief modes of applying cold in medical practice are by compresses, immersions, affusions and bladders or bags of ice. By means of the latter only are we enabled to apply cold exclusively, as in the others the effects of moisture are always superadded. Cold compresses are the least to the purpose, and the most uncertain; when used at all, they should be carefully superintended. Very much more effective, and in many cases well answering the purpose, are cold local baths (immersion) and affusions with cold water, (irrigations.) But we attain our object of abstracting heat from an inflamed part in a far more secure way, and without injurious secondary effects, by applying dry cold, by means of water-proof receptacles filled with ice, snow, or some freezing mixture. Preferable for practical purposes to all other contrivances, are ice-bags of vulcanized India-rubber, especially the American make. A bit of lint is interposed between the bag and the surface of the body, both to keep off the moisture precipitated on the bag, and to obviate the inconvenience experienced by many from the constant contact of india-rubber with the skin. By varying the number of layers of lint, we may adapt the degree of cold to the requirements of the case. And as the bags are bad conductors, too great an abstraction of heat—with its injurious consequences—need hardly be feared. The only objection to the bag is its expensiveness.

Esmarch gives many interesting details showing the application of cold to special parts and special affections, with wood-cuts and cases in illustration. We leave the subject with our readers, convinced, as we have long been, that the systematic employment of cold is a powerful remedial agent, too much neglected. L. E.

On Military and Camp Hospitals, and the Health of Troops in the Field. Being the Results of a Commission to inspect the Sanitary Arrangements of the French Army, and incidentally of other Armies in the Crimean War. By L. Baudens, Inspector and Member of the Council of Health of the French Armies, formerly Surgeon-in-Chief, and First Professor, of the Perfecting School of Val-De-Grace, etc., etc. Translated and annotated by Franklin B. Hough, M.D., late an Inspector of the U. S. Sanitary Commission. New York: Baillière Brothers, 440 Broadway. 1862. 12mo. Pp. 260.

In our fearful struggle with the rebellion, we may derive great benefit from the experiences of other nations in recent wars. Such benefit, too, is perhaps more important and more needed in relation to the health of our soldiers than in relation to any other military matter. It is for this reason that we gladly welcome the publication of books such as the one now before us. We rejoice to be able to contribute something to its wider dissemination.

Its title-page fully expresses its nature; and the translator's preface, its purpose, viz.: "To render the results of the dearly-bought lessons of that campaign useful to the American armies in the present war for the preservation of our National Government." Dr. Hough goes on to say, that it was the painful duty of the historians of the Crimean war to record many errors and oversights, resulting in a most fearful loss of human life; that after these faults were discovered, their remedy was attempted by the medical and administrative officers of the army, with as much success as their resources allowed; and that the expedients adopted for relief, in a wild and desolate region, at a great distance from their supplies, are at once suggestive and profitable to every person who may be concerned in the health of armies. We would ask—Who among us now is not "concerned in the health of armies!" and we strongly commend the little volume to the perusal of all our readers, whether they are already in the direct military service or not.

The manner in which the translation and annotation is performed is in general satisfactory, although it might occasionally, in both particulars, easily be improved upon.

The work is divided into three Parts and an Appendix. Part I, contains, after the description of the author's voyage to the theatre of war and the medical topography of the Crimea, excellent historical and suggestive remarks in distinct chapters on the soldiers' food, shelter, and clothing. We extract the following from the author's report, addressed, November 10th, 1855, to the French Minister of War:

"1st. *Of the Shelters.*—To the troops encamped in the forest of Baïdar, I advise the building of huts buried a yard and a half in the ground, with roofs of double slope, made of brush, covered with earth, or better still, sodded. At the bottom of the room there should be a fireplace opposite to the door, which should be constantly fed with wood from the forest, to renew the air, especially in its lower strata, to dry the walls, and to render a habitation that otherwise would generate typhoid fevers and scurvy, a warm and healthy abode. Where wood and water abound, the soldier is happy. Instead of carrying bread to the distant cantonments of Baïdar, we sent sacks of flour, which was made into bread on the ground; thus economizing the wood which came to Kamiesch from Varna. This forest, in a hygienic point of view, fulfilled expectations. The six weeks which three divisions of the first corps spent there could not have been more favorable to the health of the troops, and especially that of the recruits.

"The camps placed upon the undulating plateau of the Crimea were also in perfect health. Unfortunately, not a single tree was left; and the subterranean forest, that is, the roots of trees cut down the year before, are nearly exhausted. It is useless to think of building huts; tents must be resorted to. Where the soil was calcareous, they dug a circular pit, some two feet deep, in which the tent was placed; making a gutter around it for drawing off the rain-water. The materials taken out served to build a wall around it, about two feet high, so that the soldier, when in bed, was sheltered entirely from the wind and the rain. The shelter would have been complete had they added a fireplace, as in the officers' tents. Where the soil was not calcareous, the arrangement was sooner made, but not as good; for the circular bank, in form of a parapet made around the tent, was not to be compared with the wall of dry stones, and the ditches had to be paved, to hinder the water from filtering into the inside of the tent. It is necessary to furnish the men with either a sheepskin or a plank (biscuit boxes answer the purpose) to keep them from the ground, and a piece of oiled cloth, which they could form into a mantle, by wrapping it around them on rainy days.

"The shelter-tent is entirely insufficient for winter, and it is so short that it does not cover the feet of the men. It may be advantageously replaced by the conical tent, fashioned after those of the Turks, of all tents the warmest and strongest to resist a gale of wind.

Tents should always be set as far apart as possible, and when the weather permits, should be moved at least every four days. When the sun shines the contents should be exposed to the air, and the tents should themselves be taken down; but unfortunately, this very essential requirement is not attended to, even in the field-hospitals. It should be signaled by tap of the drum, which never fails to catch the ear of the soldier. * * * * * * *

"2d. *Of the Clothing.*—The Crimean cloak has been of great service, and it is urged that it should be furnished to all soldiers. They have nevertheless done wrong by wearing it in summer, instead of keeping it for bad weather in winter. This abuse of it renders them sensitive to the cold, and exposes them to the effects of vicissitudes. The flannel girdle is indispensable, in preventing and checking the diarrhœas that are so common, and that so often run into dysenteries and other very serious maladies. It should be applied in direct contact with the body. Our old soldiers know its usefulness, but it is not easy to make the recruits wear it. I invoke, for the enforcement of this regulation, the vigilance of all commanding officers and regimental physicians.

"In winter, we distribute to the troops another half blanket, to be used with that given them for summer use. This blanket loads down the soldier on the march. When it becomes damp, as it does by the first rain, it can hardly be said to get thoroughly dry the whole winter. I am convinced it could be profitably replaced by a red woolen shirt, like that worn by the English. A woolen shirt keeps up a pleasant and uniform warmth. Every man should have two, which, at 75 cents each, would amount to $1.50, or the price of one blanket. The men would be less loaded, and they would have next to the skin a warm, dry, and perfectly healthy garment. Flannel shirts ought to come into general use in our infirmaries and field-hospitals, where they would prevent and cure many diseases.

"The wooden shoes, which our soldiers use as a change for their wet shoes, are indispensable in a country where the ground is trampled up to a considerable depth; and during the last winter, the men, whose shoes were frozen hard for many days, could not have gone out, had it not been for these wooden shoes. Socks are very useful, and not only supply an indispensable outfit for walking in wood, but are also of precious use during the night, in keeping the feet from freezing. It might be difficult to supply them for the whole army, but General Bazaine has assured me that in every company there may be found men who will knit them for their comrades, for a very moderate price.

Besides, with some of those ingenious machines, of which models were shown at the great Paris Exhibition of 1855, we might be readily supplied.

"3d. *Of the Food.*—We cannot too highly praise the department of subsistence for having so happily solved the difficult problem of provisioning an army eight hundred leagues from France; and at no other period in our military history has the daily issue of rations been made with more regularity. It did not fail a single day, and the alternation of fresh bread and biscuit, of coffee, wine, and brandy, and of fresh meat, preserved meat, and lard, was conducted with facility, breaking the uniformity of food, and resulting in general health.

"The supplies most needed were fresh vegetables, and to this want, as well as to the cold and damp habitations, and to sleepless nights spent in the trenches, was to be ascribed the scurvy, which so seriously embarrassed the army. To supply the want of fresh vegetables an abundance of preserved mixed vegetables should be provided, sourkrout, potatoes, and onions; they are the best for the soldier's use. Seeds for sowing culinary gardens, and especially radish seeds, should be distributed to the companies; and it would be desirable to supply the mess with condiments, such as cloves, long pepper, nutmegs, and laurel leaves. Thyme abounds here, and I advise its use in seasoning soups. Cargoes of oranges and lemons, sent to the Crimea, will be necessary in treating, and even in preventing, scorbutic affections. Of vegetable acids the army of the East had long been deprived."

In one of the answers to his report, the "Intendant-General of the Army" wrote to the author: "I observe, with pleasure, that most of the hygienic measures advised by you have been executed, and we have gone even further, than you require, in regard to clothing. You seem to regard it as difficult to furnish the whole army with socks, but I am happy to inform you that in the coming winter every soldier will have, not only a pair of socks, but likewise a pair of woolen stockings, and a pair of long gaiters."

The author adds the following remarks: "It will be seen that my hygienic views agreed entirely with the plans of the Intendant-General of the Army. The result of these studies will show that my *medical and surgical suggestions were also uniformly sanctioned by the Minister of War, and by the Marshal commanding in the East.* [The italicizing is ours, but even without this, comparison with this country readily suggests itself to the reader.] We can never form too high an estimate of the services which medical science can render to an army in the field, and of the influence that it may exert upon the vicissitudes of war. Its counsels, which are not always asked or heard until suffering and death make us cruelly feel their value, might have saved many a man who has lost or imperiled by imprudence a life of which the nation had need. The preservation of the soldier, sent out at great expense, is the first thing of interest to a people who may be conducting a foreign war, and it is the first pledge of success. Diseases slay more men than steel and powder, and it is often easy to prevent them, by a few simple hygienic precautions."

Part II. treats of the infirmaries and ambulances of the trenches, and the field hospitals; with instructive examples of medical and surgical practice.

Part III. is devoted to the regular hospitals, placed beyond the actual seat of war, to receive the sick requiring long and careful treatment. This division of the volume the author introduces thus: It was not against the Russian arms alone that the allied troops of the Crimea were forced to struggle. Those acquainted with the history of long campaigns are aware that accidental or endemic diseases commit greater ravages among soldiers than gunpowder and the sword. Besides the hygienic precautions necessary to preserve those in health, and the care demanded by the wounded, the wants of the sick and convalescent press incessantly upon the military administration the most painful problems of medical science. If we review the history of our hospital establishments during the war in the East, this fact will be shown; and I trust that the administration and science will never cease from their exertions, until these problems, which are the highest aim of their double task, are solved.

The individual Chapters of Part III. are headed: 1. The Cholera; 2. The Hospitals at Constantinople; 3. The Scurvy and Typhus; especially giving a detailed and thrilling account of "Typhus in the Crimea;" 4. The Return of the Army.

We reiterate our recommendations of this complete yet brief medical history of the Crimean War, regarding, as we do, its publication as of great service at this time. The Messrs. Baillière have performed their part well. L. E.

EDITORIAL AND MISCELLANEOUS.

—We notice with great pleasure the vigorous manner in which the New York County Medical Society is entering upon its new year. We have always felt that the legal recognition of its existence, the legislative protection which it enjoys, and the fact that it is the only Medical Society in New York City which has a right to send delegates to the State Society, entitled it to the hearty support of the profession. Our legislators are slow enough to recognize the importance of sustaining legitimate medicine, and when they take so important an initiative as this, we ought surely to be willing to meet them half way.

The Anniversary Meeting of this Society took place on Monday, October 6th, 1862, at the College of Physicians and Surgeons, H. D. Bulkley, M.D., President, in the chair.

The reading of the minutes of the Comitia Minora for the past year, and of the regular monthly and annual Reports of the different Standing Committees, having been disposed of, the election of officers, Censors, and Delegates for the ensuing year took place, with the following result:

Alfred Underhill, M.D., President; Chas. Henschel, M.D., Vice-President; Guido Furman, M.D., Recording Secretary; Henry S. Downs, M.D., Corresponding Secretary; S. T. Hubbard, M.D., Treasurer; Wm. N. Blakeman, M.D., Thos. C. Finnell, M.D., Wm. H. Thomson, M.D., I. E. Taylor, M.D., G. F. Woodward, M.D., Censors.

The following named gentlemen were elected as Delegates for four years to the State Medical Society, commencing February, 1863: Doctors H. D. Bulkley, H. S. Downs, Chas. Henschel, Alf. Underhill, Wm. H. Thomson, S. T. Hubbard, S. A. Purdy, J. R. Van Kleeck, Wm. N. Blakeman, John Shanks, J. O. Pond, J. B. McEwen, J. P. Loines, A. S. Purdy, J. J. Connolly, G. F. Woodward, and Guido Furman.

At a Stated Meeting of the same Society, held on Monday evening, November 3d, 1862, at the College of Physicians and Surgeons, the minutes of the last meeting having been read and adopted, the newly-elected President, Dr. Underhill, delivered his inaugural address. The following gentlemen were appointed by the Chair to fill the respective Standing Committees of the Society:

Committee on Diseases—Drs. Bulkley, Van Kleeck, Finnell, Thomson, and Raphael.

Committee on Intelligence—Drs. Taylor, Garrish, Adams, H. S. Smith, and Thorne.

Meteorological Committee—Drs. Loines, Drake, and Foster.

Library Committee—Drs. Downs, Steele, and S. P. White.

Finance Committee—Drs. Blakeman, O. White, and Blois.

Dr. Thomson continued the reading of his paper on "Medical Observations in the Inspection of 9.000 Recruits." It being composed chiefly of statistics, no proper abstract can be given.

—We bespeak for Dr. Davis's article in our present number a careful reading and consideration, for it is only on reflection that those to whom the principles which it maintains are for the first time presented will see their full force and appreciate their importance, as forming the basis of an entirely new and scientific mode of treatment of a class of cases which have heretofore been only an opprobrium. It is useless to say as some cynics in the profession do, "There is nothing new in all this; we have known long ago that pressure would produce ulceration and absorption." The knowledge was not practically applied in this particular direction, and it is the practical application of knowledge to work out a certain definite result which constitutes the essence of discovery.

We have recently had the pleasure of examining Dr. Davis's *last* invention, in the way of a splint, for *his mode* of treating morbus coxarius and white swelling, and can say that we do not see how any further improvement can be made, for it seems to be all that can be desired as to elegance, simplicity, durability, and adaptedness. It is *very light*, and each instrument admits of so great a variation in its length as to render two sizes sufficient for all ordinary cases.

Dr. D. has been so particular in their construction as to have machines made for the formation of each part, that they may be all alike and as perfect as possible. We would advise our medical friends who may be in want of splints to obtain this.

The doctor has recently opened, at 210 Madison Avenue, a commodious and elegant establishment or Institute for the accommodation of his patients from abroad, where they can be under his immediate supervision. The profession and public owe the doctor a debt of gratitude for what he has done in his department, particularly the almost entire relief which his treatment gives in two diseases which occasion so much suffering, viz., morbus coxarius and white swelling.

The doctor has also invented an important improvement upon the crutch; he terms it "an adjustable handle." It can be applied to the single staff or ordinary crutch, and enables the individual to support most of his weight upon his hands, and this without the top of the crutch pressing against either the body or arm, the hand is so directly over the bottom of the crutch. The relative position of the arm to the staff of the crutch is such, that the top of the crutch is not pinched between the arm and the body. The doctor's patients who have used them prefer them to the double cane-crutch, that costs four times as much.

— We have to notice the death, on the 11th ultimo, of Dr. John C. Cheesman, M.D., who for half a century past has been a respected practitioner in this city. He was for thirty-five years a member of the Board of Trustees of the College of Physicians and Surgeons, and for a long period Surgeon to the New York Hospital.

THE AMERICAN

MEDICAL MONTHLY.

DECEMBER, 1862.

LECTURES, MONOGRAPHS AND CASES.

The Causes and Means of Prevention of some of the most Important Diseases of the Army: A Discourse delivered before the New York Sanitary Association, November 13, 1862. By John H. Griscom, M.D. Published by direction of the Association.

It will be universally admitted that nothing can excel the horrors of the field during and subsequent to a great battle, especially after a series of conflicts in rapid succession, such as were witnessed on the Yorktown Peninsula, in May, June, and July last; and in September, in Maryland. While all deplore the sanguinary struggles, and desire their speedy ending—however opposed one may be to the policy of the Government, or however friendly or inimical to either party in the strife—there probably does not live the man or woman on either side who, when an immediate conflict has ceased, would not, if able, hasten to the scene at the call of humanity, and render every possible aid to relieve the sufferers and save their lives. Never was there a nobler instance of wide-spread benevolence, or a greater regardlessness of money, time, and material, exhibited by a people, than has been developed by the present unhappy war. Almost as one man, the country has poured out its wealth and industry in furnishing supplies for the comfort and care of the wounded and the sick, ever since the memorable day of Sumter, and the end of eighteen months sees the supply apparently as abundant as ever.

The good disposition of the people, and their willingness to bear the burden, have been most nobly demonstrated; but while their spontaneous benevolence finds no diminution, and is systematically and efficiently administered, we fear, when the manner in which the executive departments of the Government have discharged this portion of their functions is inquired into, the verdict will not be so flattering.

After the recent engagements at Antietam Creek, the hospitals, so called, extended over a space *not less than thirty miles in circumference.* Said an eye-witness, "There is not a barn, farm-house, store, church, or school-house between Boonsborough, Sharpsburg, and Smoketown, that is not gorged with the wounded, rebel and Union;" and he adds, "Even the grain-cribs, in many instances the cow-stables, and in one instance the mangers, were filled. *Several thousands lie in the open air upon straw.*"

That such events as these must occur more or less often, and such circumstances continue for a while, and until there is time for the arrival of the needed succor, in the shape of hospital stores, utensils for preparing food and medicines, and all the paraphernalia required for efficient assistance; and that there should be a deficiency of shelter for a while, for so many thousands suddenly added to a sparsely settled district, is a matter of course, and may be unavoidable for a few hours, and even two or three days; but beyond that time, not one wounded or sick man should be exposed to the inclemency of the weather, or without proper surgical assistance, and food and drink. But in the case above related, more than a week had elapsed, and these circumstances were yet to be seen.

Another sad instance of delay and consequent suffering occurred at White House, connected with the establishment of the field hospital at that place, subsequent to the evacuation of Yorktown and the battle at Williamsburg, and during the operations on the Chickahominy. I quote the description of Dr. S. D. Willard, of Albany, a participator in the circumstances, as given by him to the New York State Medical Society, of which he has long been the honored Secretary. "When we arrived, in the evening, (Monday, May 19,) we found a message from Dr. Tripler, requesting us to report to him the next morning, at 7 o'clock. This we did. He informed us that he had determined to organize a field hospital at that place, and to send back the sick and disabled of the army there for treatment. He requested us to establish this hospital, of which Brigade-Surgeon J. H. Baxter was to remain as director. *About three hundred sick had* *been left on the ground.* The hospital was to be composed of one hundred tents, erected in double line, on an oblong square, to accommodate twelve hundred patients, or twelve in each tent. There was a delay in obtaining spades and axes; nothing could be done without them. It began to rain early in the afternoon, and the sick men were picked from the road-side as fast as tents were erected to shelter them; others gathered under the trees until tents were ready. Night came, and there was neither straw nor any food. The poor sick and wounded fellows laid down on the ground like brave men, without straw or food, and without a word of complaint. On Tuesday, ambulances arrived with the sick faster than we were able to dispose of them. *The straw we obtained was wet and musty.* There was yet no means of getting water, or beef, or kettles, or wood, and the thousand other things that pertain to the necessities of a hospital,—and when night came again, we all laid down *on the ground* in our tents, tired and hungry, and full of sympathy for the sufferings we could not relieve. On Wednesday, the army supplies began to come in. The Sanitary Commission arrived, and furnished us with beef, straw, beds, pillows, shirts, and towels. * * * *On Thursday, a tremendous rain flooded the ground, and some of the tents, so that many of the sick lay in the water.* This was bad enough, but the men were brave and uncomplaining. Hay *was brought after the rain, to raise them above the wet,* and the surgeons waded through mud nearly to the tops of their boots, to see that the hay was distributed, and to look after the sick. Immediate measures were then taken to *floor the tents with plank, six inches above the ground,* and to increase the drains around them. * * * There were received at this hospital during the first week about seventeen hundred patients. * * * When the wagons and ambulances reached the hospital at night, there was no alternative but to leave the patients in them until morning, until beds could be provided for them."

It seems that even in matters of such pressing urgency as this, Government officials are very slow to profit by experience. Instances of the same kind of deficiency and neglect continue to occur up to this very day. Soon after the second Bull Run, or Manassas, disaster, happening in Washington, while in company with the Surgeon-General, a letter from one of our own army surgeons was handed to him, informing him that 2,000 of our wounded still lay upon the field without any shelter, and a great deficiency of food, and this *was a week after the battle,* and within a *few hours' ride of the capital.* With characteristic energy, his head and heart both stimulated to action, Surgeon-General Hammond in a few hours had improvised an ambulance corps by impressing every available hack and omnibus in the city, and ere midnight the long train was on its way to the unhappy scene, laden with surgeons, provisions, and medicines, leaving the citizens to wonder what event had so suddenly deprived them of their usual means of vehicular locomotion.

Even so late as the middle of October a newspaper correspondent writes from

"ON THE FRONT, ONE MILE SOUTH OF
"CHARLESTOWN, Va., Thursday night, Oct. 16, 1862.

"The army's idleness and the clear, golden days, have gone out together. The troops are advancing, and the Fall storms have commenced. This morning the column moved; to-night 6,000 of our soldiers, without tents or shelter, lie here in the searching, drenching rain."

Can any one doubt that a large number of that noble 6,000 succumbed the next day to rheumatism, pneumonia, diarrhœa, dysentery, fever, or some other of the numerous foes which lurk in the rainstorm, and strike from the mud? Probably not a man of them rose from his earthy bed in fit condition for his duty.

These three examples—the field hospital at White House, with its 1,700 patients lying in the water, though under tents; the post-battlefield of Antietam, with its 7 to 10,000 wounded, covering an area of 30 miles in circumference; and the unsheltered 6,000 at Charlestown, passing a night in the "searching, drenching rain," may be taken as types of the terrific circumstances to which the army of the Republic is sometimes subjected.

I speak of them in this connection not for the purpose of casting censure upon any one, if any be due—nor would I know on whom to place it; that is not my aim, nor should I consider it my duty; but that I may more pointedly and forcibly present to you the *preventives*, within reach of individuals as well as Government, and which the fathers and mothers, the wives and friends of the soldier—in a word, which an intelligent people should see to it are provided for them. For I unhesitatingly declare my conviction, as I believe I shall be able to demonstrate at this hour, that ample facilities are within reach of both Government and individuals, to save nearly every life that ought to be saved from these death-dealing agencies.

There are, then, three positions in which the soldier is apt to find himself, in which he requires *special* means of protection; these are: *on the march*, in *the camp*, and *the field hospital;* and these terms are intended to embrace all the various circumstances of exposure to the mal-influences of the soil and the weather—every position, in fact, except that of the barracks, which, though possessing their peculiar causes of disease, are not contemplated within the design of the present discussion, except as the remarks may be incidentally applicable.

It is well said by an able sanitarian, Dr. Jarvis, of Massachusetts, that "the power and efficiency of an army consist in the amount of the power and efficiency of its elements—in the health, strength, and energy of its members. No army can be strong, however numerous its soldiers, if they are weak," and especially, we may add, if they are sickened by the neglect of the external circumstances essential to health.

By the investigations of statisticians, it is shown that among the best conducted armies of the world, under the most favorable circumstances, the amount of sickness and mortality has been from three to five times greater than among the same class of persons in civil life; and the inquiries of the U. S. Sanitary Commission show "it is manifest that our Union army is one of the healthiest on record." Nevertheless, it is indisputable that no small proportion of the sickness and mortality which has already occurred is due to causes *positively within reach of preventive measures.*

In order to secure a constantly active force of 300,000 men, the nation must maintain in the field an army of about 325,000. That is to say, out of 325,000 25,000 will be constantly sick and disabled from various causes.

The number of sick varies, in different regiments, from ⅓ of 1 per cent. to 49 per cent.*

The principal causes of the increased amount of sickness in military over civil life are well known to every medical man who has given the subject attention, and to a brief review of them I now ask your notice, as preliminary to a demonstration of the means of prevention.

One has but to rehearse the particulars of the complete and sudden change of habits of life which almost every soldier undergoes, from the moment he leaves his comfortable home, his well-loaded table of properly-cooked food, his airy chamber, his clean and oft-changed clothing, to none of which has he had occasion to give his personal attention, for it has all been cared for by his mother, wife, sister, or housekeeper, whereas he now becomes suddenly and without experience converted into his own housekeeper, cook, laundress, everything

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* Report of Sanitary Commission, No. 40, p. 47.

—one has but to remember and appreciate the totality of the revolution of social condition experienced by the volunteer when he enters the army, to understand how numerous and powerful must be the agencies which press against his health and strength.

Of these evil agencies, unavoidable as many of them are, I do not intend to speak at length, but desire to call attention to some of the most potent and productive. It is true that a proper amount and kind of food, a sufficient amount of sleep, cleanliness of skin and purity of air, are essential to the preservation of that degree of robustness of body and tone of mind which constitute an able-bodied man, and in proportion to the absence of these are the individuals of the army rendered inefficient; but if asked to mention the circumstances or practices which, before all others, are the most active and general in the prostration of the strength and health of the men, I would instance two in particular, viz., *sleeping on the ground*, and the *crowded occupation of close, small, and unventilated tents.* These causes of sickness may exist anywhere, in any region of country, but when to these are superadded the paludal miasms of the South, we find diseases of most grave character and great abundance.

Every army that has yet existed has proved the noxiousness of these practices in a greater or less degree. In the British Army, in 1798, says Dr. Pringle, the regiment which had 52 per cent. sick in two months, and 94 per cent. sick in one season, "were cantoned on marshes whence noxious exhalations emanated." "Another regiment encamped where meadows had been flowed all winter, and just drained, and half the men became sick." Says Dr. Ed. Jarvis, in his excellent paper on the *Sanitary Condition of the Army*, in the *Atlantic Monthly* for October, "One of our regiments encamped at Worcester, Mass., on the Agricultural Society's grounds, where the upper soil was not dry, and the subsoil was wet. The men slept in tents, *on the ground;* consequently there were thirty to forty cases of disordered bowels a day. The surgeons caused the tents to be floored, and the disease was mitigated.

The 11th Mass. Regiment was encamped on a wet soil at Budd's Ferry, Md. In a week thirty cases of fever appeared. Dr. Russell, the surgeon, ordered the camp to be removed to a dry field, and the tents to be floored with brush; no new cases of fever appeared afterwards.

But instances of this kind are innumerable; it may even be said that the contrary practice is the exception, for, *with the present style and character of tents*, even when this movable canvas house is attainable at all, as well when it is not, the ground for a bed, be it wet or dry, is often inevitable; and this, I repeat, is one of the most potent and abundant causes of the extraordinary amount of sickness observed in army life.

With the ordinary substitutes of straw, or boughs of cedar or fir, or even wooden floors, these evils are but slightly modified, as is demonstrated in the official report to the Secretary of War, by the Sanitary Commission, on the sanitary condition of the Volunteer Army, made in December, 1861.

The following data, taken from the returns of 120 regiments, chiefly in November, show the ratio of sick men per thousand in regiments which had been supplied respectively with india-rubber blankets, wooden tent floors, straw, fir or cedar boughs, and the bare ground for sleeping on:

REGIMENTS SLEEPING ON	120 REGIMENTS—AVERAGE RATIO PER 1,000 SICK.
India-rubber blankets	60.9
Wooden floors.................	75.7
Straw or boughs	77.5
Bare ground	91.3

Even board floors, the next best to india-rubber blankets, were generally objected to by experienced officers, as they were thought to be more damp than the ground itself, (though we are not told how that could happen,) and as they offer an opportunity for the collection of rubbish and dirt, and make them difficult of removal.

The second circumstance upon which the chief causation of military diseases must be laid, is the excessively foul air inhaled by every man during his sleeping hours, when these are passed within the narrow and crowded confines of an ordinary tent. Except the Black Hole of Calcutta, where the mortality in a single night was 123 out of 146; or the former convict transport-ships of Great Britain, where it ranged from 60 to 70 per cent.; or the abominally kept tobacco warehouse and other prisons of the rebel capital, there is scarcely to be found a more unenviable or dangerous dormitory than the tents in ordinary use at present in the armies of our own and other nations.

To illustrate the wide difference between what is considered essential to good health in the dormitory arrangements of domestic life, and their compulsory counterpart in military life, let us view them side by side.

A decent chamber in an ordinary dwelling of the moderate size of 15 feet square and 10 feet high, giving 2,250 cubic feet of air, with two or three windows, a door and a chimney, whereby connection with the open air is constantly maintained, is commonly regarded as a small enough sleeping-room for two persons. It gives 1,125 cubic feet to each. Three lodgers in such a room are regarded as too great a crowd for health; and when necessity compels a larger occupancy, as of five to ten persons, (as in hundreds of tenement houses in this and other cities,) even when ordinary ventilation is maintained, which is scarcely possible under such circumstances, there cannot be a sufficient supply of oxygen for the full decarbonization of the blood, and the occupants necessarily rise in the morning languid, enfeebled, and unrefreshed; if, indeed, they are without headache or fever, or some other positive evidence of disease. Even with the smallest number of occupants I have mentioned, the olfactories of one entering the chamber in the morning, from the fresh air, will furnish unmistakable evidence of the kind of occupation it has had during the night.

Now, the Sibley tent, the most favored of the numerous forms in use in our army, has a cubic area of only 1,052 feet—less than one-half the chamber I have supposed—yet it is required to accommodate from 12 to 20 men. 12 men have in it an average of 88 cubic feet, while 20 have but about 52 feet each. But there are some tents in use which give less cubic area than this—one even so small an amount as 25 feet to each man. Will it surprise any one to learn, that with such shocking sanitary circumstances as these; such total disregard of all natural hygienic law, that the sickness in military life should exceed three to five times the amount in civil life, even under the worst conditions of the latter?

The English bell-tent, said by Quartermaster-General Airey (a singularly inconsistent name, if he is responsible for the fact,) to be the best in use, contains 512 cubic feet, and lodges 12 to 15 men when on march, and 8 to 12 men when in camp; in the former case affording 34 feet, and in the other 43 feet of breathing space for each. Now, it is a fact that every living man inhales an average of at least two hogsheads of air every hour; consequently, 12 men will consume, in 6 hours, 144 hogsheads. But the capacity of the best tent is probably not more than one-eighth of this; and the result must be, that at the end of 6 hours' occupation of a tent, if there has been no ventilation, the air within must have been inhaled eight times over, with a result to its character which language cannot describe.

Another mode of computation gives the same general result. The amount of fresh air required per minute by each individval is differently estimated by different physiologists, varying from 2½ cubic feet to 20, according to the varied circumstances under which their experiments are made. Taking the moderate medium of five feet as a basis, let us see what opportunities are offered for that amount in a tent. The *Sibley tent* contains, as already stated, when empty of everything else, 1,052 cubic feet. When a man enters it, an equal bulk of air goes out of it; in other words, its aerial capacity is reduced by so much, and 12 men reduce the bulk of air proportionately. Allowing 6 cubic feet to each man, 72 feet of air are therefore expelled, reducing the breathing area of the tent to 980 cubic feet, or about 82 for each man. But we have seen that at least 60 cubic feet of air per minute are needed for the healthful respiration of 12 men; consequently, all the air inside the tent, if it is shut close, will be inhaled in less than a minute and a half; and in one hour, should the inmates live so long, they will have reinhaled the air 40 times. The mortality in the Black Hole of Calcutta is, therefore, easily accounted for and understood; and were our tents made of impervious stone walls, even with a window, or the peak opening, similar results would be observed. Fortunately the canvas walls are not impervious to air, and the lives of the men are not immediately destroyed, though their health does suffer, as our crowded hospitals all over the country prove.

But respiration is not the only means by which the living body vitiates the air in which it lives. The carbonic acid gas, formed by the union of the oxygen of the air with the carbon of the blood, and which is thrown out at every expiration, it is true is the most directly poisonous product of animal life; and it is also true, that "the insalubrity of the air *is in the ratio of the carbonic acid diffused through it.*"

The direct deleterious influence of this poison, however, is assisted indirectly by the diminution of the quantity of oxygen. The removal of the carbon of the blood by means of the oxygen of the air is essential to the purity of the vital fluid, and in proportion to its undue retention are evil results observed. Therefore, when from four to six per cent. of the oxygen is *lost* at each respiration, a second inspiration of the same portion of air not only carries into the lungs the carbonic acid before exhaled, but the absence of a sufficient proportion of oxygen prevents the removal of another portion of carbon, which, being retained in the blood, destroys, by so much, its vitalizing property. Non-ventilation, therefore, produces, in this way, a doubly deleterious effect.

But neither is this all. Besides these results of *respiration*, other sources of contamination of the atmosphere exist in *pulmonary* and cutaneous *transpiration*. A large amount of *watery vapor* is continually exhaled from the surface of both the lungs and the skin. The enormous amount of this substance thrown into the air from these organs is easily ascertained, but would scarcely be credited without evidence. The entire surface of the pulmonary air-cells and tubes is estimated by Lieberkuhn at 1,400 square feet, (equal to a floor 28 x 50 feet,) from which aqueous vapor is continually exuding in variable quantities, according to the state of the atmosphere, and other circumstances. It varies from half a pint to nearly a quart in twenty-four hours. It is this which we see in the form of a light cloud, issuing from the mouth in a cold day, with every exhalation, or condensing in drops when breathed upon a cold window-pane.

Besides this, every man's skin is an active distiller of fluid, in the form of *sensible* and *insensible perspiration*. The perspiratory tubes of the adult body, if placed in single line, would extend to the length of 28 miles; and they terminate on the surface of the skin in *seven millions* of pores. Through this immense line of sewerage there is poured out into the air around each person, every 24 hours, an amount equal to that from the lungs, as just mentioned. The estimated minimum total of both is 4 pounds, 6 ounces. This cutaneous "perspiration and pulmonary transpiration are not water only, though composed largely of that element. A small portion of it consists of free acetous acid, muriate of ammonia, soda and potash, an atom of phosphate of lime and oxide of iron, and a minute quantity of animal matter, closely resembling gelatine. The relative proportion of solid matter to that of water varies from 0.5 to 1.25 per cent.; and a portion of carbonic acid gas is also exuded with the perspiration."

It must be borne in mind that the whole of this 4½ pounds of matter, daily thrown off from the living body, is effete, unvitalized, liable to, and actually does undergo decomposition in a close atmosphere, aided by the heat of the body itself; and both in its natural state, but especially in its condition of putrescence, when concentrated and pent up, it becomes a virulent poison, whose effects are seen in the typhus and other diseases, the *opprobria* of jails, emigrant ships, hospitals, barracks, camps, and other crowded, filthy, and unventilated places.

A regiment of 1,000 men throw off from their persons, every 24 hours, 4,500 pounds—more than two tons—of this deleterious matter. In the open air, especially under that wise and benevolent provision of Nature, a good breeze, it is removed immediately from the precincts of the body, and its inspiration is prevented; but when concentrated in a close room or tent, its reinhalation is inevitable more or less, and a more or less depraved state of the blood and body is the equally inevitable result.

The proportionate amount of air to each occupant of a tent, or building of any kind, is, after all, a matter of consequence only in connection with the *absence* or *presence of ventilation.* A small area, with *good* and *sufficient* ventilation, is more wholesome than a large area without any. If the foul and poisonous products of respiration, the carbonic acid, the moisture, and the other animal exhalations, could be removed as fast as produced, and their places supplied with pure air, an individual might, as far as mere breathing is concerned, live as well in a hogshead as in the open air with only the canopy of heaven for a covering. But a renewal of the air, constant and sufficient, he *must have*, or sickness in some one of its numerous forms will ensue; or at the best he is called to his daily duties unrefreshed, and unfitted to bear their burden.

But the question will be asked, Are not these tents ventilated? Is no means provided for the escape of the foul gases, and the admission of fresh air? And if not, why not? The popular Sibley tent is claimed to be well ventilated; sufficiently so for the largest crowd that ever occupies it. But the entire fallacy of this claim is demonstrable upon well-established principles of pneumatics. The form of the Sibley tent is a circular cone, closed all round, with a slit in one side, which may be enlarged by drawing aside the canvas, so as to form an entrance. The apex of the cone is formed of a separate piece, and is so arranged that one-half of it may be always open, and it revolves so that the open half may be made to present against or from the wind at pleasure. When presented from the wind, or when there is no wind at all, it is supposed that the foul air within will escape by this aperture. But it scarcely needs an argument to prove that when the tent is closed below, which will always be the case in cold or rainy weather, (for the sleepers adjoining the entrance will see to that,) and no air can there find access, it is next to impossible for the air within to escape by the opening above, or for the external air to enter thereat, except by the very slow process of chemical gaseous diffusion; and were this a sufficient means of ventilation, the Black Hole of Calcutta had been unheard of. In fact, this arrangement of the Sibley tent is precisely that of a bottle with half a cork in its mouth. If we can imagine such an aperture, or even the whole aperture of the bottle, to act as a ventilator, then we may imagine it also of the tent; but it is manifestly impossible. There can be no interchange between the atmosphere within and that outside, except by the chemical process just mentioned, which would be too slow for the requirements of a single individual, much less sufficient for a dozen or a score.

In a letter to the Governor of Massachusetts, on the sanitary condition of the troops in the neighborhood of Boston, Dr. S. G. Howe employs the following emphatic language, confirmatory of this truth:

"As for the floor space and the cubic space of air allowed to the men inside the tents, it seems hopeless, with the modern ideas of encampment, to have as much as is absolutely required for health. Of all the *impedimenta* of an army, tents are among the greatest; and many brilliant campaigns have been made without them. Indeed, I doubt whether, in the long run, men who sleep in the open air, without other covering than a hooded capote or a poncho, suffer more than those who are poisoned by the close and fœtid air of tents. In ours, the floor surface is so small that the men must lie in contact; while the roof is so low that the cubic space is no greater than that of the Black Hole of Calcutta.

"It is true that in dry weather the canvas is porous; and besides, the flaps can be kept open; but in wet weather the canvas becomes almost air-tight, and the doors must be kept closed.

"As for the self-ventilating tents, so called, they afford relief to some extent, and in ordinary weather; but, like all other modes of ventilation which depend on atmospheric pressure, *they fail in those conditions of the atmosphere when ventilation is most needed.*

"Think of putting 12 men to lodge in a room 12 feet square by 6 feet high, though ever so well ventilated. We would not so treat our children; we would be ashamed so to treat our servants; but we do so treat our soldiers."

[The reading of the paper was here suspended, for the exhibition of a working model of McKinnell's *Concentric Double-Current Ventilator*, by Mr. John Hyslop, demonstrating the impossibility of ventilation by a single opening in the ceiling or roof of a house alone.]

The next consideration due to this subject is of the *measures of prevention*, and these must vary with the different circumstances in which we find the soldier.

His position *on the march* is, in many respects, widely different from that *in camp;* while they are still different, both as to his personal condition and self-ability, while *in hospital*, especially when wounded, and particularly immediately after the battle, before he can reach a regularly organized hospital. Under the latter circumstance he is a perfectly helpless being, appealing in language which, though mute, is in the strongest possible terms, to every feeling of human brotherhood, every sentiment of patriotism, and the positive inculcations of Christianity.

Allusion has already been made to the first great necessity—an ample and well-trained *ambulance corps*—consisting of suitable carriages, furnished with couches, hospital stores of every kind, (including casks of water that will not leak their contents all away before reaching the field, as was the case as Centreville,)* and every appliance that can be desired for the succor of the wounded. Of the precise style and form of ambulance carriage it becomes not me to speak on this occasion, further than to say that the Governments of Europe have furnished us abundantly with opportunities to determine that point, and the results of their experience are actually on record in our own national archives, obtained by the military commission appointed by Jefferson Davis in 1855, of which Captain (now General) G. B. McClellan was a member. After the bloody battle of Inkerman, according to the report of that commission, the form of carriage most in vogue was a wrought-iron chair or litter, hung in pairs like *pack-saddles* on mules' backs, and one hundred and sixteen of which, in use on that occasion, sufficed to transport all the wounded in a very short time. That our Government has not entirely lost sight of this suggestion I know, from having seen a few of this ingenious arrangement strapped upon horses, ready for immediate use, but why they have not been more freely brought into requisition, I know not and cannot opine. These of course should not be preferred to wheeled vehicles, when the latter may be made serviceable.

This subject being now undergoing discussion pretty freely in the press, it is hoped that we may not again be put to the open shame of a repetition of the shocking delays and neglects which have been seen after almost every severe battle of this war; and if our Government, for any reason whatever, still further postpones the necessary measures of relief, let the matter be taken in hand by the people themselves, either directly, or through the U. S. Sanitary Commission, which has already done so much for the relief of our sick and wounded, and within whose immediate purview it comes, and whom the country would undoubtedly in such an undertaking second with all its might, with both money and material.

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* Dr. Bowditch's letter.

Though declining to occupy the present time with any suggestions as to the best or proper form of an ambulance conveyance, I cannot refrain from throwing out one hint, because of its very obvious necessity, though I have not seen it alluded to elsewhere. I have already quoted some instances of the long exposure of the wounded to the inclemency of the weather, from the absence of shelter of any kind. It may happen that every future battle, like many of the past, may be fought at so great a distance from any general hospital as to render the transportation of the wounded thither impossible within a reasonable time; and, as at Centreville and Antietam, there may not be even enough *cow-stables* or *mangers* in which to find shelter from the piercing winds and rain. Now it appears to me that this might readily be obviated, by requiring every army wagon or ambulance wagon, or if this be impracticable, that there should be vehicles especially adapted to the purpose, of carrying *hospital tents*, to accompany the different army corps, ready for every emergency of the kind. Such a tent as is before you to-night, better ventilated than any ever before made, and so arranged in the interior that the inmates *cannot lie on the ground*—though it would be valuable in common use in camp as a preventive of sickness, would be especially so as a hospital tent, under the emergencies of the battle field.

Had each army or hospital wagon been furnished with one of these tents at the recent field of Antietam, each tent accommodating twelve men, every wounded soldier would, in a few hours, have been placed on a comfortable, dry hammock, under protection from the sun, wind and rain—avoiding the wet earth as a bed—and rendering even straw or hay unnecessary. To that sad scene of suffering, scarcely equaled in extent of area or of numbers in modern times, the Sanitary Commission sent out a large number of wagons with supplies of every kind, *except this one.* What a boon would have been one to each wagon!

The tent before you is called the *ventilated hammock tent*, and is the result, as I am informed, of long study after extensive inquiry among the improvements and practices of other nations, by an officer of the American army, Gen'l Geo. W. Morgan, of Ohio, formerly our representative at the Portuguese Court. As its title indicates, it possesses two important qualities: 1st, The arrangement of hammocks, twelve in number, by which that number of men have each a separate sleeping berth, on which they can comfortably repose, not only above the ground, but with a space of air between them and the soil, whereby the influence of its cold or dampness is completely avoided. Each hammock weighs only two and a half pounds, and by its use all other adventitious contrivances for a bed, as straw, boards, brush, and even India-rubber blankets and cots, are rendered unnecessary. One great advantage of this arrangement is, that in a few minutes after *reveille* call, every hammock can be unhung, rolled up in a small ball, and put away, leaving the interior of the tent a clear space, where tables may be spread, a fire kindled, a pot hung, or anything else requiring room, be done; and at *tattoo*, in an equally short time, the hammocks may be again stretched for the night's repose; all of which comforts and conveniences are denied in any ordinary tent where the floor is covered with straw, or boards, or brush.

Its second advantage is one which I suppose may be adapted to other forms of tent, but which, as it has been first adopted in connection with the hammock arrangement, deserves especial mention in that connection; I mean its *better ventilation*. Unlike the Sibley, this tent has openings near the peak or ridge, on *both sides*, whereby, in whatever direction of the wind, the external air will enter on one side, and the foul air within escape by the other; and even in case of a calm, the quadruple apertures will allow a thorough interchange of the atmospheres, which is impossible with a single one, as you have seen in Mr. Hyslop's model.

By this arrangement of apertures, each being covered with a fly to exclude rain, the tent may be closed below, and yet there will be a ready removal of the impure, and a supply and distribution of pure air; not always with such rapidity, perhaps, as to prevent absolutely *any* retention of the exhalations for a little while, but to avoid it in such degree as to render tent-life comparatively harmless.

Another valuable point of this arrangement is yet to be noticed. In all ordinary tents, every aperture below, in cold or wet weather, is pretty sure to be closed as tightly as possible by the sleepers on the ground, to prevent the unpleasantness and danger of a direct current of cold air; and for more effectual security, an additional strip of canvas, called the *sod-cloth*, is frequently attached to the lower edge of the tent inside, resting on the ground, which is kept in place by laying on it the straw or other material used for the beds, thus almost hermetically sealing the tent below. But in the new arrangement, the lower tier of hammocks being twenty-one inches above the ground, the lower edge of the tent may be raised a few inches, and the inflowing current of air will be so diffused before it reaches the sleepers, as not to be felt through the hammocks on which they rest, and all may have the advantage of it.

It is an interesting fact, that in a Report on Army Medical Statistics, presented to the British House of Commons, (printed in June, 1861,) after the experience furnished by the campaigns of the Crimea, it is stated that, "If soldiers die in battle by hundreds, they die in hospitals by thousands;" and we find mentioned as necessary to reduce the sickness in the field, the application of the following two among other principles, viz.: 1st, "*Letting the men, when it is practicable, breathe purer air;*" and 2d, "*By raising the men, in their tents, from the ground.*" The value of these obligations is here recognized by high authority, yet the only method hitherto adopted to accomplish this latter purpose is that of movable cots, which, from their cumbrousness, can only be used in permanent locations, as field-hospitals; whereas, the light weight of the hammock enables it to be carried in a knapsack or a pocket. It was left for American ingenuity to devise a plan for both purposes.

But it is true, as stated by Dr. Howe in his letter to Gov. Andrew, that tents are among the greatest *impedimenta* of an army. Except in winter quarters, while in camp, or other circumstances requiring a long detention of the army in one vicinity, tents become a burden. In long and rapid marches, in frequent changes of position, especially in front of the enemy, they are very apt to be left behind, and under such circumstances some substitute is essential to protect the men at night from the storms, and even from the dews. For this purpose the "*tent d'abri,*" or *shelter-tent*, was invented, and some of our own regiments have discarded the large tent altogether, and trust entirely to the small shelter-tent. This accommodates but two men, who must necessarily lie on the ground, except they have rubber blankets, or boughs, or straw; they are generally made of light cloth or canvas, which is not entirely impervious to rain, as I have been informed by a member of the 51st, who has slept under one. They afford, of course, very narrow quarters; but so far as the cubic area is concerned, could they be sufficiently ventilated, they would be as appropriate as the overcrowded ordinary tent.

It has been left, in this case, as in the other, for American ingenuity to contrive an arrangement of the shelter-tent, which is a great improvement on the French; on the original of which there seems to have been no previous attempt at improvement.

I am happy to have the opportunity to present this new and ingenious arrangement to the Association this evening, as one of the means by which the health of the soldier may be preserved. This tent is made of material impervious to water; is in two separate pieces or sides, each of which is carried by one man, and serves him, when not needed as a tent, as an excellent water-proof overcoat, when on picket or guard duty, or when otherwise exposed; or as a blanket, in which he may securely ensconce himself; and at night, when united with a corresponding sheet or side, forms a tent which completely protects from the weather. A very neat point of this arrangement is, that without intending it, the maker has so made it that it is self-ventilating, on the same principle as the hammock-tent, by the apertures, by which it is slipped over the head when worn as an overcoat.

Mr. President, when my attention was first drawn to these important subjects, some months ago, during visits to the vicinity of the seat of war, it seemed to me remarkable that so imperfect provision existed in advance for the care of the sick and wounded of the army. As subsequently I saw and heard more and more of the losses and sufferings consequent upon a want of means of transportation, and of temporary or field-hospital accommodation, the wonder increased that a government so powerful and rich in resources, sustained by a people whose sympathetic heart pulsates in unison with every benevolent thought, should so neglect this branch of the military service. But the climax of surprise was reached when I heard from the lips of the head of the medical department himself, that he had pressed this serious matter again and again upon the appropriate departments, and had gone as far as official propriety would permit in urging its consideration, and that action on his suggestion had positively been declined by his official superiors, leaving him powerless in his benevolent wish.

Under these circumstances, my attention was called to the particular measures which have been described here this evening, and which are emphatically measures of humanity—true *life-preservers.* A careful and independent examination convinced me of their inestimable value, and I took occasion to solicit for one of them, the hammock-tent, the consideration of the distinguished head of the Government himself; but the vast general concerns of the Republic forbid his close attention to matters of detail, which belong more especially to subordinate departments. I was told, moreover, by a distinguished and influential citizen, that he had exhausted argument with the head of the Bureau to whom action on the subject belongs, in reference to the superior qualities of the hammock principle, but found him immovable. He firmly rejected it.

Under these circumstances, most solemnly impressed with the verity of the views I have expressed, I have felt it a duty to bring these topics before my fellow-citizens for their consideration; peradventure, some plan might be suggested by which these preventive measures could be made more generally available; and I tender to you, Mr. President, and my fellow-members of the Sanitary Association, my cordial thanks for this opportunity to do so, and to the several gentlemen who have rendered me their valuable assistance in illustrating, so fully, my purpose of showing by what means many lives and much treasure may be saved, this sad war be facilitated to its conclusion, and our beloved country be more speedily restored to her peaceful and prosperous condition, and, as I fondly hope, with a Union forever free from every disturbing cause.

An Improved Mode of Treating Fracture of the Thigh (and other Accidents of the Lower Limbs) without Extension, Splints or Bandages, by which the Patient can be safely transported to any Distance without Interruption of the Cure, which takes place without Shortening or Eversion of the Foot, and in perfect Symmetry with the Sound Limb. By R. NELSON, M.D.

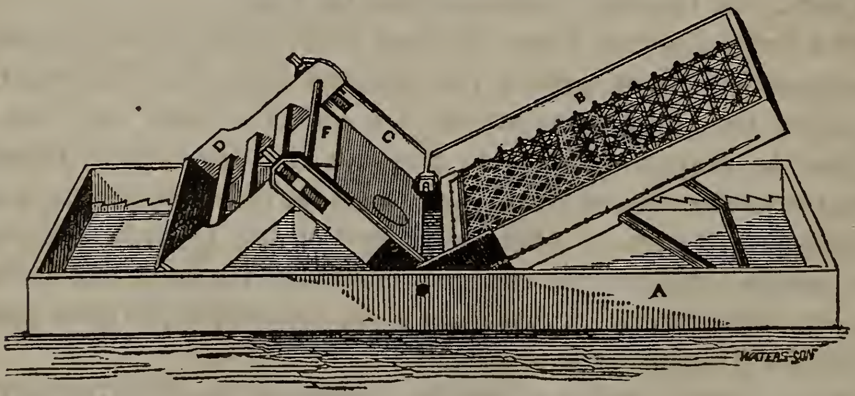
It is admitted as a rule, that shortening always takes place in the cure of fracture of the femur, unless it be a transverse one, which so rarely happens that it needs no notice in this paper. Besides shortening, more or less deformity—as turning out of the foot, and sometimes stiffening of the knee-joint, follow. To guard against, or remedy these serious results, numerous devices, from the earliest times until now, have been employed, with only partial success. Short splints, long splints, the double-inclined plane, various modes of extension, even that of a weight acting ceaselessly, have been had recourse to in vain. The object of these appliances is to maintain the limb of its natural length, and to keep the fractured ends in apposition, in both of which cases they more or less fail; for the short splints can only compress the muscles against the bone at the lower two-thirds of its length, since the bandages or ligatures that confine these splints can reach no higher than the inside of the groin, which is only a little higher than the first third of bone; especially in robust men—in the pyriform thigh of women—and in the enormously fat thigh of children. Besides these defects, the short splints exert no control against shortening. They are in this respect useless.

The long splint was invented to remedy one difficulty—muscular contraction, and the consequent shortening of the limb. This is effected by counter-extending forces hitched to the extremities of the splint. That at the groin losing nearly half of its power by reason of the obliquity of its position and action, more across the thigh than in its long direction, and by the constant yielding of the soft parts under the strap. Besides these faults, the groin strap produces much pain, chafing, sometimes even ulceration, and always irritation—which irritation ceaselessly excites the muscles to that very contraction it is wished to overcome. It exerts no controlling power over the action of the iliacus and psoas muscles, which ceaselessly draw up the pelvic portion of the fractured bone out of the line of the lower one, and to bring down which, the muscles in front are pressed against the projecting edge of the fracture, making another source of irritation. From the straight position it keeps the limb in, the sartorius is not relaxed, but is left in action, twisting the lower fragment on the upper one at the point of fracture by its oblique course over the thigh and insertion at the inner side of the head of the tibia. It is this action of the sartorius that twists the knee outwardly, and with it the leg and the foot—exacting clumsy appliances to correct a created fault, and one that ought not to exist. Maintaining the leg extended on the thigh does not relax the flexors of the leg—that is, the gracilis from the pubis, the semi-membranosus and semi-tendinosus from the ischium to the head of the tibia, and the biceps from the ischium to the head of the fibula—but keeps this large mass of posterior muscles on the stretch, constantly tending to draw one fragment past the other, and so shorten the limb.

The double-inclined plane has one merit—that of not pressing the muscles in front against the fractured edge, or of attempting to bring the upper fragment into line with the lower one; but it brings the lower fragment into line with the upper one. Beyond this, the double-inclined plane is as useless as the short splints, since it is applied to only *one* limb, and imperfectly to the pelvis, leaving the fracture subject to the numerous motions of the body, and to consequent displacement. It has never given satisfaction, has given much trouble, and is now justly abandoned.

While all these modes of treating fracture of the thigh are physically and anatomically defective, none of them admit of the patient being transported from room to room or to distant places, without injury and risk. They are all followed by shortening, more or less deformity of the limb, sometimes by an impaired knee-joint, and sometimes by absence of union, occasioned by the ends of the fracture riding past each other, and permitting the intervention of soft tissues. Such results I had already seen when, in 1820, I had a case that terminated disastrously. The patient was a very fat man, and the fracture was at the upper third. The long splint was employed to effect counter-extension, but it failed in its purpose. His great mass of fat prevented the groin strap from reaching a resistant substance, as this constantly yielded to the pressure; besides that, the thickness of the thigh and groin gave so much obliquity to the strap that it acted more across than in the long direction of the limb; it soon became imbedded, chafed, and gave pain and irritation. Short splints were also employed to depress the cocking up of the pelvic fragment, but proved useless, since the groin prevented the top ligature from reaching high enough up to hoop and stave them down. The termination of the case was a shortening of more than *five* inches, the lower fragment running under and on side of the upper one; no union took place by reason of the intervention of tissues, and there remained great deformity. The reproaches from this bad case set me to thinking how the two essential elements for uniting a fractured femur could be obtained; that is, to keep the ruptured surfaces in proximity, and prevent motion between them. The first required relaxation of the flexor muscles of both the thigh and leg; and the second required that the pelvis and *both limbs* should be confined. These ends are attainable by a *triple* inclined plane, secured in a suitable frame to admit of transportation.

NELSON'S TRIPLE INCLINED PLANE.



CONSTRUCTION OF THE FRAME.

Let an outside frame, A, be constructed of board about six inches high, thirty wide, and six feet, four inches long. Along the lower edge of this first frame, on its inside, let a cleat be nailed, on which the second or inside frame is to rest. This inner frame is the important part of the apparatus, and is to be of dimensions to fit the inside of the first one. This inner frame is cut into three lengths, B, C, D; one for the head, trunk and pelvis to rest upon; the next portion, C, for the thigh; and the other, D, to support the leg. Each piece is to have a bottom made of slats, cane, cord, or tick, to support the bed. The thigh-piece must hinge with the trunk-piece into the outward frame at the centre. The leg-piece hinges on the top bar F of the thigh-piece, which bar is movable, up and down, by means of a fixed screw, G, let into a slit cut into the sides of the distal end. Turning the two screws will have the effect of moving the top bar up or down, and by this means the length of the thigh-piece can be made to suit a long or a short thigh. A trap-door, H, is cut into the lower board of the thigh-piece, about six or seven inches long and four wide, to serve for the evacuations, through which they can pass without disturbing the patient.

The next and last article to be constructed is the mattress, made of curled hair, husks or folded blanket, divided into two portions, one for the trunk to lie on, and the other for the thigh and leg. The thigh mattress must have a piece of the size and place of the trap cut out, and this piece so taken out of the mattress is to be bound round with perpendicular sides, so as to fit exactly the part whence taken. It must be well quilted through to preserve its shape, otherwise it might become pressed askew, and then not give equal support to both ischia. The part of the mattress whence the plug just mentioned has been removed is to have perpendicular sides also.

The mattress is laid on a frame, and over it a sheet, with a long slit in the centre opposite the trap. This sheet ought not to be of hard smooth-ironed linen, for such is apt to chafe soon; cotton is not so bad; the best material is a soft woolly blanket, for on this the ischia and sacrum can repose for a long time without heating or chafing.

All is now ready for use, placed close to the patient. Lift him on to the centre. Next, elevate the trunk-piece about 20 or 25 degrees. After that, raise the thigh-piece about 35 degrees; the leg-piece will fall naturally by its own weight and catch into the notches of the cleat below, and in this way secure the thigh and leg at proper angles. When all this is done, lengthen or shorten the length of the thigh-piece by turning the screws G, which will cause the distal bar F of the thigh-piece opposite the ham to ride up or down until it has reached the correct length of the sound femur, and, of course, adjust and reduce the fractured one to a corresponding exactitude. It will now be found that the projection of the upper fragment ceases to bulge out the muscles, since the lower fragment is brought into line with that of the upper one, flexed as far as the iliacus and psoas can draw it; that the "extension" is correct, since both thighs are brought to an equal length.

Should shortening have occurred, it would be well to adjust it a little longer than the correct length, and suffer the pelvis to hang by the hams a little while. This will have the effect of drawing the fragments apart sufficiently to disengage any fibres of muscle that may have intervened. After a short delay, turn back the screws as much as will suffer the sacrum to bear on the bed.

All this placing and adjusting is performed without manipulation of the limb, or "setting," as it is called; without pain or violence; without the faulty and inefficient *extension* attempted by means of the long splint. The weight of the trunk slides the pelvis down against the raised thigh-piece; the weight of the pelvis draws the pelvic fragment with itself. The elevation of the thigh brings the lower fragment into line with the pelvic one; the leg, hanging at the ham, across the last bar of the thigh-piece, draws the lower fragment away from the upper one, and completely prevents contraction; in this way *natural* extension is attained without recourse to the long splint, its straps, bandages, chafing and pain.

The leg, lying on its frame, nearly at right angles with the femur, permits of the complete relaxation of its flexors attached to the ischium and pubis. The sartorius is also relaxed by the flexion of the femur on the pelvis, leaving it no power to turn the foot outwardly, since the knee-joint is a hinge incapable of rotation, and is kept in correct position by the mere weight of the leg. Hence it is that none of the clumsy appliances had recourse to when the long splint is used are now needed to rectify a foot that is not and cannot be out of place.

Bandages and short splints may be dispensed with; but, as the muscles are apt to twitch at times, and become flabby, a many-tailed bandage may be lapped over the thigh, and a short splint, merely to subject the muscles.

The frame, with the patient on it, may be placed in any convenient part of a room, or removed to another at will, and in summer carried into the yard or garden for the sake of air or recreation; but care must be taken that it rest on the trestles, two chairs, one at the head and foot, or on a table, quite *level* transversely; for, if not, the patient will sag towards the lower side, and derange his position. This fault is remedied by simply putting a wedge under the lower side.

At the time of defecation, open the trap, remove the mattress plug, and place the vessel to receive what passes. The operation over, let the nurse wipe the patient, and any part of the mattress soiled, with a cloth or sponge wetted. After this, replace the plug with *exactitude*, so as to make the mattress full and even; shut up and fasten the trap against it. For the urinary discharges, pass a length of "tubing" between the plug and mattress, out through the trap, the lower end resting in a vessel, and the upper one fitted with a funnel, properly shaped, for male or female, to lie in the perineum, to be used by the patient at will, without the aid or even knowledge of persons present. In this way the patient is kept clean and dry.

Every well-conducted hospital ought to be provided with the frame and bed just described; and the country surgeon in large practice will find it a satisfaction and a profit to keep at least one in readiness for an emergency. Should he have none when called to an accident, he can easily improvise one with the aid of a joiner in a few hours. In the case of children, a convenient frame can be quickly made with two pieces of board—one to serve as a platform for the other, which is to be sawn into two—one-half for the body to lie on; the other half, sawn into two; one portion for the thighs, and the last for the legs to rest on. The body and thigh-pieces to be fixed to the platform-piece with leather or other hinges. Both boards to be cut out, and the thigh one fitted with a trap. The best kind of mattress for a child is made by folding a woolly blanket into several plies; or a *comfortable* will answer; of course the plug must be cut into this, as in the case of an adult. In children, I have found it useful in practice to pass a roller across the pubes and ilia, and tie the ends under the trunk-piece; the same, in cases of *delirium tremens*, will effectually confine the patient. This mode of treating children has many advantages over any other; two may be mentioned: 1st. The difficulty of splinting their fat thigh is avoided; next, 2d. A child is fretful when left without company, as in the case of poor people. The mother can do her work, and carry her child to be present and amused.

This mode of treating fractured thigh is useful in many disorders of the lower limbs; as in hip-joint cases—even to lie on at night in the early stages of coxalgia—in cases of resection, sinuses, &c., and admits of cleanly dressing.

CASES.

I think it proper to cite a few cases out of many as illustrative of its utility:

1. A lumber-man, the owner of many rafts, was on his way to his contractors, when the raft he was on was wrecked in shooting the Crochet

Rapids. He and his men, and his timber, were tossed to and fro in the cascade until they floated into smooth water; he, with his thigh broken, was hauled on the beach. I sent to him one of my frames; put him upon it. By this time the logs were again cribbed and rafted; and he, well understanding his case and the use of the frames, insisted on continuing his journey. He was embarked on his raft, went to the end of his journey, a distance of over two hundred miles, was carried to a hotel in Quebec, where he settled accounts with his employers; after this, was placed on a steamer and arrived in Montreal after a six weeks' travel, having suffered no interruption in his affairs, and having traveled, in all, over four hundred miles. In Montreal he was taken off his bed perfectly cured, without shortening or any other defect.

2. A drover was knocked down by his cattle and had his thigh fractured obliquely, the sharp end of the pelvic fragment protruding. Having placed him on the frame, by lengthening the thigh-piece by means of the screws over an inch and a half, his pelvis hung by the hams across the top of the leg-piece; the protrusion was soon and easily drawn in. In two days he felt so comfortable that, without consulting me, he started for his home, above one hundred miles distant in the "Eastern Townships," across several large rivers, and over bad mountain roads. He arrived safely, and recovered without defect.

3. A priest fell on the curbstone and fractured the femur. He was taken to the Hôtel-Dieu Hospital, in Montreal, placed on one of my frames, and carried by his parishioners to his home, Chambly, where he perfectly recovered.

4. A young gentleman, a student at the College of Fordham, N. Y., aged about 18 years of age, broke his thigh in 1841. The neighboring surgeon attended to him in the usual way. About the fifth day he suffered so much pain that I was sent for. I found the limb over two inches short. With the aid of the man-of-all-work at the establishment, I succeeded in extemporizing a frame, in about three hours; put the patient on it, and in a short time the weight of his own body reduced the fracture and restored the length of the limb without any of the usual attempts at extension. He recovered symmetrically.

5. Mrs. Graham, 62 years of age, was run over by an omnibus in Broadway, on New Year's Eve, 1845; the wheel passing over the thigh, fractured it. This occurred at her own door; she was carried at once to her room and disposed of in the best way for the time. In a little over a day a frame was constructed, on which she was placed;

the very frame now in possession of Dr. Arnold, of Yonkers, who has used it with perfect success, and exhibited it to the N. Y. Academy of Medicine. Mrs. G. recovered perfectly, symmetrically, without any perceptible difference in the two limbs. This venerable and highly respectable lady, known to a large circle of the old families of New York, is still living, aged 78, and a few days since walked nearly five miles. No one can perceive the slightest halt in her walk.

6. A young lady was so treated before Mrs. Graham. She is now one of the attractive women in Baltimore, and dances to perfection, no one being aware of the slightest defect.

QUARTERLY REPORTS ON MEDICAL PROGRESS.

REPORT ON SURGERY.

I. *Polypi of the Male Urethra, with Perforation of that Canal.* By Dr. Beyran. (Extract from a paper read before the Société Chirurgicale. L'Union Médicale, No. 96, August 14, 1862.)

II. *A Successful Case of Transfusion in Puerperal Hæmorrhage.* By Dr. Weickert. (Deutscher Klinik, June, 1862. Journal de Médécine et de Chirurgie, September, 1862.)

III. *Two Cases of Hypogastric Puncture of the Bladder performed upon the same Subject, with an Interval of Seven Years between the Operations.* By M. Chassanial, Second Physician-in-Chief of the Imperial Marine. (L'Union Médicale, September 13, 1862.)

IV. *On Cauterization of the Omentum after the Operation for Umbilical, Inguinal or Crural Hernia.* By Dr. Phillipeaux, of Lyons. Read before the Société Chirurgicale of Lyons, at its Meeting of July 23, 1862. (Gazette des Hôpitaux, August 7, 1862.)

V. *Of Various Procedures applicable to the Treatment of Ranula.* (Journ. de Méd.; Dublin Medical Press, November 19, 1862.)

I. Urethral polypi are very rare among males. I have had in my practice quite a large number of diseases of the genito-urinary organs, without ever meeting with an instance of it. Last year only, for the first time, I had occasion to note and to treat these polypi, in the case of a hypospadiac, who, experiencing difficulty in urinating, imagined that he had a stricture. It was in fact for this latter affection that he had up to that time been improperly treated, as we shall presently see.

Fungous growths of the urethra are incomparably less frequent among men than among women. The ancients have not only made no mention of this disease in respect to males, but they even seem to have known nothing about it. We must come down to 1835 before finding any details upon this subject in the writings of authors. Nicod is considered as the first who has made mention of it; but on consulting his book, entitled *Treatise upon Polypi, and other Fleshy Growths of the Urethral Canal and of the Bladder*, we cannot fail to remark that this author was most profoundly ignorant of the disease which he proposed to describe.

Urethral polypi among men were not really distinguished from other diseases of this canal until 1836, and it is to M. Velpeau that we are indebted for this definite knowledge. At this period, this surgeon demonstrated that urethral polypi, although relatively more frequent among women, still existed none the less among men. "Men," says he, "may equally be disposed to this sort of polypi: I now have two cases of them: in one, the excrescences, three in number, are scarcely equal in size to a grain of barley; in the other case, that of a young Englishman, these excrescences were still smaller. Their insertion was in both instances behind the urinary meatus. In neither case did any reappear, after having been crushed or excised.—(*Médecine Opératoire*, 2*d édit.*)

However this may be, the following case of the patient whom I treated seems to me to be one of special interest, by reason of the complications which these polypi presented relatively to the urethra:

Mr. D., twenty-six years of age, of sanguineous temperament, robust constitution, issue of healthy parents, never himself had either blennorrhagic flowing, nor chancres, nor other venereal diseases. He always enjoyed good health, but was troubled with a defective conformation of the urethra, or hypospadias, characterized by imperforation of the gland, and by the abnormal opening of the urinary meatus below and behind that part of the organ.

Micturition was freely and easily performed until 1860, at which period, for the first time, Mr. D. felt an abnormal sensation—a sort of obstruction in the urethral canal. This uncomfortable sensation was soon followed by difficulties of micturition, characterized by heat, smarting, and swelling of the penis at the moment of the passage of the urine. It seemed to him that a mechanical obstacle hindered the urine from issuing by the meatus, and drove it back. The jet of urine was modified in issuing from this orifice; it was divided into an infinitude of small streams, like a liquid falling through the perforations of a watering-pot.

The patient went to see a physician, who thought he had to do with a stricture, and consequently treated him by dilatation of the urethra. But each introduction of the bougie, far from dilating the canal and affording him relief, caused the patient intense pain, followed by flowing of blood. This treatment, employed without success for a month, resulted at first in inflammation, and afterwards in perforation, of this canal, behind the urinary meatus.

Thus discouraged, the patient then gave up all treatment, and confined himself for several months to taking warm baths.

In the month of February, 1861, seeing that his condition remained about the same, he called upon Dr. Girardin, who kindly confided his treatment to me. His condition at that time was as follows:

His well-developed genital organs were, with the exception of the opening of the meatus, in a normal condition. There was hypospadias; the gland was imperforate; the urinary meatus was below, and $\frac{4}{5}$ inch behind, the highest part of the gland. The prepuce, very slightly developed, did not cover over these parts. Two-fifths of an inch behind the abnormal meatus, and along the course of the urethra, there was a solution of continuity or crack, whose slightly separated edges presented a length of $\frac{1}{3}$ inch antero-posteriorly.

This accidental opening was not unobstructed; on separating its lips and turning them outwards, there appeared on their internal face soft, fleshy excrescences, of a scarlet color and rounded form, about the size of a small pea, and having remarkable vascularity; they bled with the greatest readiness, and were held merely by a slender pedicle fastened in the urethral mucous membrane. I could count four of them; that is to say, two on each side of the opening in question. A stylet introduced by this opening at first met with some difficulties in penetrating, but by pushing it back and forth, it was arrested at a distance of about $\frac{2}{5}$ inch; if slight force was used, the stylet traversed the meatus, which was also obstructed. This exploration caused an escape of blood.

The examination of the abnormal meatus demonstrated, in its turn, the presence, in this orifice, of three polypi; smaller, however, than those situated at the accidental opening of which I have just spoken. These three polypi were quite visible upon the inferior wall of the meatus; they were about the size of a grain of barley, and presented the same characteristics as those of the fistula.

These fleshy excrescences became more manifest during efforts at micturition; this function was itself performed with difficulty; the urine issued in great part by the accidental opening, and in small quantity by the abnormal meatus, which permitted the liquid to flow like a watering-pot.

At the moment of micturition, the penis became slightly enlarged, and the patient then experienced in the canal a sensation of tension, at times very painful; the first and the last portions of the urine were sometimes bloody. These morbid phenomena disappeared after micturition.

During erection, the penis became somewhat painful, especially in the urethra; and during the ejaculation, the patient experienced a painful tension; a tearing sensation throughout the entire length of the canal; a sensation accompanied by rectal tenesmus and tingling in the perineum. He also remarked that after coition, the semen issued slowly and in very small quantity at a time, through the artificial opening.

Treatment.—I excised these fleshy excrescences by means of curved scissors, and the bleeding was checked by cauterization with a pencil of nitrate of silver. In the evening the bleeding recommenced, which necessitated a new cauterization, and the introduction into the urethra for twenty minutes of an elastic bougie, $\frac{1}{8}$ inch in diameter, which passed through the entire length of the canal without difficulty; a thing which was not possible before the destruction of the polypi.

The next day a new cauterization. On the day following, the introduction of a bougie, $\frac{1}{6}$ inch in diameter, covered with a calomel ointment, which I left in the canal for twenty minutes.

In short, the treatment lasted one month, and consisted in the employment of bougies every three days consecutively, and cauterization on the fourth day. At the end of that time the calibre of the bougies had reached $\frac{1}{3}$ inch, nearly.

I should remark that these bougies were always covered with the ointment of calomel and savin, to the use of which I attach some importance.

This treatment, thus combined, resulted in the definitive cure of these polypi. Although the abnormal meatus and the accidental opening had become perfectly free, the urine still issued in great part by this latter opening, a complication which demanded an especial treatment. To obviate this inconvenience, I cauterized the edges of the urethral fistula, and directed the patient to close the opening with his finger, at the moment of urinating. He did so more than a month without any result. I was then compelled to give up this method, and undertook to vivify the edges of the fistula to bring them together, and to fasten them by means of fine straps. Having once more failed, I finally had recourse to the use of flexible sounds of large calibre during micturition, for it was absolutely necessary that the contact of the urine, which alone prevented reunion, should be avoided. This method was employed during four weeks, at the same time that some slight cauterizations favored the reunion of the edges of the wound, and at the end of a month it was so much reduced that it would hardly admit the stylet. This fact was noted by M. Jarjavoy, who kindly visited the patient with me.

II. Transfusion is no longer a new operation, but successful cases are not yet so numerous that we may not be permitted to mention such as from time to time illumine the medical horizon. The *Deutscher Klinik* of the 7th of June, 1862, contains a case which, from this point of view, is worthy of mention. It was that of a woman recently confined, to whom all sorts of hæmostatics had been applied in vain to arrest a frightful loss of blood. Syncope, coldness of the extremities, absence of pulse, alteration of the eyes, all announced impending death, when Dr. Weickert, who reports the case, decided to try transfusion of blood.

One of the children of the patient, a robust lad, seventeen years of age, furnished the blood necessary for the operation. The left median vein which was to be opened, was first laid bare the length of an inch, and throughout this length was freed from the areolar tissue. Afterwards there was carried into the venous tube a trocar, whose canula served to introduce the syringe which conducted the liquid. In addition, a thread was passed under the vessel, which was thus raised up, and was pressed against the instrument every time that a sudden jerking movement of the patient interrupted the injection. To perform this operation, Dr. Weickert employed Martin's apparatus; and as, above all things, this surgeon was desirous to prevent the coagulation of the blood, he took the precaution to permit each time only so much of the fluid to issue from the vein as would suffice to fill the tube of the syringe; unfortunately, this precaution had an unexpected result, which was near being disastrous. In short, after two or three aspirations, corresponding to so many little bleedings, the young lad fainted, and it became necessary to complete the operation by calling upon a young girl of vigorous appearance, who very kindly made sacrifice of a portion of her blood. Thanks to these two loans, the indication was fulfilled; the patient rallied, and after a regular confinement, again enjoyed perfect health.

This result is the more remarkable because the operator was unable to avoid the coagulation which he feared. Not only did the blood become solidified in part in the syringe before the piston had traversed the length of the tube of the syringe, but it even coagulated in the vase into which it was received on issuing from the vein, although M. Weickert caused the vase to be warmed, and raised the temperature of the syringe to nearly the same degree. M. Jaccond, who has very judiciously appreciated the value of this fact, justly remarks, that M. Weickert in this respect did precisely what was necessary to run counter to his own purpose, and to hasten the coagulation of the blood. The experiments of Hunter, of Hewson, and of Scuddamore, have afforded an unanswerable demonstration of this fact. It seems even to be established that the temperature best suited to produce coagulation is precisely that of the animal to which the blood belongs. The researches of Davy, on the other hand, have shown that at 32° the formation of the coagulum is retarded one hour. M. Jaccond does not pretend, we may infer, that it is necessary to cool to this point a liquid which is to be injected into the veins of an individual whose normal temperature is from 98 to 100°; but as the most favorable limit is not yet known, in the opinion of this physician, it would be better to search for it experimentally, than blindly to obey a precept which has no other justification than mere routine.

III. On reading in the *Répertoire Générale des Sciences Médicales*, that Professor Roux had never been compelled to puncture the bladder, and that, too, after thirty years' of practice in one of the largest hospitals, I have thought it my duty to state that in the Ethiopian race cases of retention of urine, necessitating this final resource, are more frequent than among Europeans. The most ordinary cause is that of numerous contractions of the urethral canal, in consequence of frequent blennorrhagiæ, which are rarely treated in a rational manner.

In the course of the month of June, 1859, I was notified by the chief of the clinic in the St. Louis Hospital (Senegal) that a negro had come into the surgical wards suffering from complete retention of urine. I went immediately to the patient, who, on recognizing me, showed me above the pubis a small scar, having the triangular form of a mark made by a large leech; and then begged me immediately to pierce his abdomen anew. But at the time of the first puncture, which had taken place about seven years before, the chances of success were greater, while at this last time the patient was greatly weakened by long suffering, due to old contractions of the canal, which occasioned for a long time an almost total suppression of the urine: hence the evident consequences of the accidents of resorption, extreme emaciation, perspiration having the odor of urine, pulse small and very frequent, diarrhœa, vomiting, &c. As a matter of course, before the operation, all the efforts of catheterism were fruitless.

Not only were there numerous and insurmountable contractions throughout nearly the whole of the urethra, but there was also, if not a formal counter-indication, at least a serious obstacle to the performance of the operation known as the button-hole operation, in consequence of a considerable and *partial* swelling of the prostate; an accident which, in its nature, is more formidable, as is well known, than the swelling of the entire gland, since in that case the urethra is found diminished and naturally put out of place, and hence great exertions and great care are required to find, during the operation, the orifice leading into the bladder. I thought proper, therefore, as a last resort, to make a second puncture, three centimetres above the pubis, and near the first cicatrix.

A considerable quantity of urine was evacuated; then replacing, forty-eight hours afterwards, the metallic canula of the curved trocar of Brother Côme, with a gum-elastic sound slipped within the former, I directed all my attention to the restoration of the normal course of the urine, but in vain. The patient, eight days after the puncture, although he frequently withdrew the sound in spite of us, still continued, without immediate accidents, to urinate by an artificial canal; a fact which has already been reported by Adolphe Murray.

I am convinced that this man, who lived more than two months after the operation, would have recovered, if the bladder, which did not empty itself completely, had not kept up a slow resorption, which could not fail to be fatal to him.

Of the three methods pointed out by authors, the hypogastric puncture seems to me almost harmless; while that which consists in puncturing the recto-vesical partition, or the Fleurant process, which I have once performed, gave me great anxiety. As to the puncture through the perineum, for which we are indebted to the lithotomist, Tolet, I think it should be even less frequently followed than that by the rectum, since to the danger of wounding, as in the former case, the diffrent conduits or the vesiculæ seminales, there is also added the formidable difficulty of having to traverse a more considerable thickness of tissue, and hence, as a more frequent consequence, greatly-to-be-dreaded accidents of urinary infiltration.

IV. When, in an operation for strangulated umbilical hernia, we find a portion of the omentum, the course to be pursued presents great difficulties.

Science is far from having definitively settled upon the method entitled to preference, for all those pointed out by authors are attended by grave, and frequently disastrous results.

These sad consequences are encountered after the employment of all the methods proposed up to the present time, namely:

1. Reduction, preceded or not by section of the adhering parts.
2. Abandonment of the omentum in the wound.
3. Excision of that part of the omentum which protrudes beyond the hernial ring.
4. Ligature, either immediate, according to the process of Celsus and Daruan, or performed after the development of fleshy granulations, as advised by the celebrated Scarpa.

Can cauterization be a satisfactory substitute for the insufficiency of all the methods we have just enumerated? No reply to this question can possibly be found in the old authors.

Although cauterization is mentioned by Celsus and Scarpa, we shall search in vain in their works for precise rules in reference to the employment and choice of caustics, and as to the effects which may be expected from their use. Moreover, in their precepts, mention is made of a superficial cauterization merely, very different from that which is designed to totally destroy the omentum.

To the surgeons of Lyons, always the supporters of this method of treatment, belongs the honor of filling up this void, and supplying what was lacking.

M. Desgranges has employed the following method, which seems to me preferable:

If the omentum is free and without adhesions, it is thrown back upon the abdomen, above the orifice of the hernia; it is held in a split compress, covered with cerate on either side, and designed to protect the wound and the surrounding organs. It is unfolded, and spread out in such manner as to present a slightly extended surface, susceptible of being cauterized in twenty-four hours. After being thus isolated, its pedicle is held between two morsels of the paste of chloride of zinc, a few millimetres above the orifice of the hernia, protected by the compress. This dressing is kept in place by a woolen bandage. These precautions are sufficient to keep down the hernia, and to prevent the caustic from spreading beyond the portions to be cauterized.*

If cauterization, employed to charm away the accidents of kelotomy, had been utilized only four times, we would have no right to claim for it the rank which it ought to hold in surgical therapeutics. Four facts are not sufficient to determine the value of a curative method, but cauterization having been made use of very many times by several surgeons in cases of inguinal and crural hernia, with very satisfactory results, I may be allowed to base upon these facts a claim in favor of cauterization for the first rank among the methods suited to assure the safety and efficiency of kelotomy.

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* *De la Cautérization de l'Epiploon dans l'Opération de la Hernie Etranglée:* Vissagnet doctorial thesis. Paris, 1858. Pp. 22.

M. Bonnet has operated once successfully for inguinal hernia; M. Barrier has obtained a like result in another case—that of a woman; M. Desgranges, who has performed 17 analogous operations, has had 13 successes to 4 deaths. I have myself performed cauterization in the case of a woman, and have succeeded.

In cases of crural hernia, M. Bonnet has had out of 3 operations, 3 successes; M. Valette, one operation and one success; M. Barrier, one operation and one success; M. Desgranges, out of 8 operations, 7 successes and 1 death.

Now that I have stated all the successful and disastrous cases in which cauterization has been employed, it will be easy for me to demonstrate the superiority of cauterization over the ordinary method, by setting forth the following statistics:

Umbilical Hernias.

MM. Bonnet	2 operations	2 successes.
Desgranges	1 operation	1 success.
Valette	1 “	1 death.

Inguinal Hernias.

MM. Bonnet	1 operation	1 success.
Barrier	1 “	1 “
Desgranges	17 operations	13 successes.
“		4 deaths.
Philipeaux	1 operation	1 success.

Crural Hernias.

MM. Bonnet	3 operations	3 successes.
Barrier	1 operation	1 death.
Desgranges	8 operations	7 successes.
“	“ “	1 death.
Valette	1 operation	1 success.
Total	37 operations	30 successes.
		7 deaths.

And furthermore, while we find out of 32 operations for strangulated hernia performed at Paris, 29 deaths and 3 successes, we can show by the Lyons method—that is to say, by means of cauterization conjoined with kelotomy—out of 37 operations, 30 successes and 7 deaths.

If, now, my statistics are compared with those of Professor Malgaigne, the result is still more striking.

Out of 183 operations of inguinal, crural, and umbilical kelotomy, this learned professor met with 114 deaths; while I, out of 37 operations by means of cauterization, find 30 successes and 7 deaths; and of these seven failures, there are as many as four, according to M. Vissagnet, which should not be attributed to this method of treatment; as, for instance, two patients operated upon while in a condition of profound adynamia, sank in death without showing any signs of peritonitis; a third patient died in consequence of a preternatural anus, as is the rule in like cases; and a fourth had already nearly recovered, when a late perforation of the intestine brought on stercoral peritonitis, and death.

At any rate, these statistics, all in favor of cauterization, are worthy of being made known, for they are based upon an assemblage of facts which prove incontestably the advantages of this method of treatment.

V. Much has been said of ranula, and the result of universal experience is, that a procedure which succeeds in one instance, entirely fails in another. Hence the necessity of describing, from time to time, the new methods proposed for the cure of a disease which too often baffles the ingenuity of the surgeon. Amongst the recent cases published in the medical journals, or observed by ourselves in the hospitals of Paris, several speak highly in favor of the seton and of drainage. The *France Médicale* relates an instance in which the disease had lasted three months, and in which M. Foucher, surgeon of the hospitals, inserted transversely into the tumor a seton consisting of three threads; two tea-spoonfuls of the characteristic fluid escaped, and the consequences of the operation were most satisfactory. Adhesive inflammation induced the gradual atrophy of the cyst, the threads were withdrawn on the eighth day, and after an interval of forty-eight hours the patient, a woman of thirty, was discharged entirely cured, and suffering no inconvenience in speaking or in mastication.

M. Chassaignac is in possession of the particulars of a dozen cases of ranula, in which he resorted to drainage with the most perfect success. His method consists in passing with an incurvated trocar a fenestrated india-rubber tube through the tumor. The extremities of this tube are then tied to each other so as to form a small ring, which fits behind the teeth, and may be left for several months, without much inconvenience, *in situ*.

In these cases the ranula consisted in a dropsical condition of the serous bursa which lies beneath the mucous flooring of the mouth, and bears the name of Fleischmann's bursa. Another variety of the same disease appears to consist in the accumulation of mucus in some of the follicles situated under the tongue. In this form of ranula the parietes of the tumor are thin and translucid, its contents are gelatinous, and a relapse infallibly occurs after a short interval if mere incision has been resorted to. For *follicular ranula*, M. Chassaignac has recourse to excision combined with the application of lunar caustic. He removes with scissors the entire wall of the tumor down to the points in which it is continuous with the mucous membrane. In a case of this description, M. Foucher applied with success M. Jobert's hem-suture. He detached the mucous membrane, exposed the cyst, a part of which he removed, and turning down the remaining portion, so as to place it in apposition with a bleeding surface, secured it in this situation with a suture.

While alluding to drainage, we should not omit to say that M. Pauli, a surgeon practicing at Landau, instead of Dupuytren's double button, employs a hollow, jointed ring, each half of which is supplied with two apertures. This appliance induces the suppuration and subsequent contraction of the cyst, without inconvenience to the patient.

The *Presse Médicale Belge* also inserted this year in its columns a communication, in which M. Deroubaix's hospital practice is described. We extract the following passage: "M. Deroubaix, in the first place, lays open the cyst by a liberal incision close to the posterior surface of the maxilla. He grasps the posterior lip of the incision with the forceps, and removes with curved scissors a portion about ten lines in width by fifteen in length. The cavity is then cleansed of its ropy and adhesive contents, and the loss of substance presents the aspect of an oval-shaped aperture, limited near the jaw and near the tongue by a margin sufficiently broad to admit of the insertion of sutures. A silver ring (strong enough to resist the pressure of the tongue, but so flexible as to be easily moulded to the form of the artificial orifice, and to adapt itself within the mouth) is placed in the wound, and secured to its margin by eight sutures. At the conclusion of the treatment, in order to avert the possibility of the ring being swallowed during sleep, it is attached with a wire to one of the teeth. This procedure absolutely prevents the edges of the wound from closing before its fundus has granulated and healed. Premature cicatrization is thus hindered, and may be delayed as long as the surgeon deems necessary."

The author conceives that this procedure is open to none of the objections which have been raised against the methods in use hitherto; and in the case he relates, a complete and permanent cure was effected.

REPORT ON PHYSIOLOGY.

I. *Engel's Theory of the Development of the Animal Egg.* (A Text-Book of Midwifery, by Dr. Carl R. Braun, Professor of Midwifery in the Imperial Hospital, Vienna.)

II. *Investigations concerning the Physiology of Smooth Muscular Fibres.* By Prof. A. Fick, of Zurich. (Wiener Medizinische Wochenschrift.)

III. *Infants with Teeth at Birth.* Prof. George T. Elliot, Jr. (American Medical Times, Nov. 1st, 1862.)

IV. *Experimental Researches into a New Excretory Function of the Liver; consisting in the Removal of Cholesterine from the Blood, and its Discharge from the Body in the Form of Stercorine—(the Seroline of Boudet.)* By Austin Flint, Jr., M.D., Professor of Physiology and Microscopy in the Bellevue Hospital Medical College, New York. (American Journal of the Medical Sciences for October, 1862.)

I. Prof. Engel,[*] of Vienna, has endeavored to build up the history of the development of the animal egg in accordance with the inductive method; and, fortifying himself partly by observations, partly by measurements and analogies, to attribute to apparently disconnected facts their import and significance; thus abandoning, as far as possible, the domain of hypothesis.

In order to compare the views of Prof. Engel with the opinions which have heretofore prevailed upon the subject of development, and which have been given in brief in the preceding section, I here introduce a few fragmentary extracts from his excellent treatise:

The disappearance of the germinative vesicle is generally accepted as one of the first results of fecundation. This fact Engel explains by supposing a segmentation of the vesicle into a vesicular blastema. After the furrowing of the yolk has taken place, we distinguish in the egg the following elements: 1. The pellucid zone; 2. The thin stratum of blastema, still remaining between the layers of the vitelline membrane, (which, it must be remembered, is by no means so distinct as the external membrane of the pellucid zone,) from which the germinal eminence, and, secondarily, from the latter, the central cavity is developed.

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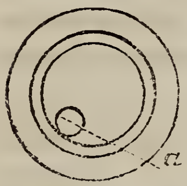
[*] Prof. Engel: Ueber die ersten Entwicklungsvorgänge im Thierei und Foetus. Juli heft, 1853 der Sitzungsberichte der mathem. naturw. Classe der kais. Academie der Wissenchaft in Wien. Bd. XI. § 223 (ἡ ἐυρησις, Erforschung.)

The blastemal layer of the germinal eminence splits into an external (serous) and an internal (mucous) layer. Engel does not retain the terms serous and mucous layer, because he considers that neither from the animal nor from the vegetative layer does any organ or the germ of any organ originate; the fœtus being more properly developed between them.

Fig. 1.



The *unfecundated* egg consists of a thick, structureless membrane, (the pellucid zone,) containing a viscous consisting of the germinative vesicle and the yolk, and fluid. On its inner surface is seen the germinal mass, surrounded by a membranous stratum of blastema. In the *fecundated* egg the pellucid zone still remains.

The germinal mass becomes the germ-sac, which is surrounded by a structureless, transparent wall, lying close to the inner surface of the pellucid zone, and called by writers the germinal membrane. The sac consists, therefore, of a double layer of membranes; but only at one point are these layers distinctly apparent. The superficial layer, heretofore called the serous or animal layer, Engel denominates the external vitelline membrane; and the second, or so-called mucous or vegetative layer, the internal vitelline membrane, or grooved layer of the vitelline membrane. The egg of this period consequently consists of three vesicles, fitted one into the other, of which the innermost includes the yolk with the central cavity.

The stratum of originally amorphous plasma lying between the layers of the internal germ-sac is called by Engel the germinal stratum.

It is only, however, from the central portion of this stratum that the embryo is developed. The germinal stratum, as seen in transverse section, then consists of two trilateral bands of plasma, symmetrically placed, and inclosing on either side a portion which is circular in its outline. This circular portion, thus imbedded in the middle of the germinal stratum, is to be remarked as the first rudiment of the embryo, and is called by Engel the embryonal sac or embryonal germ.

Fig. 2.

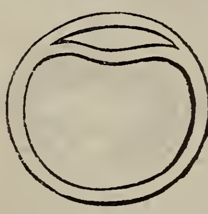


Fig. 3.

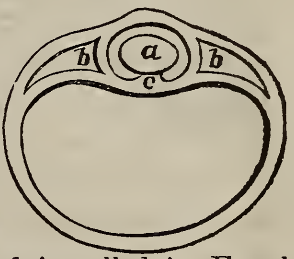


Fig. 1. Section of an unfecundated egg with (*a*) the germinative vesicle.

Fig. 2. Section of a fecundated egg, with the external and internal vitelline membrane and the germinal stratum.

Fig. 3. Transverse section of the egg and the germinal stratum. (*a*) Embryonal sac. (*b*) Trilateral bands of plasma. (*c*) Point at which the amniotic cells do not coalesce.

This germ is shut in upon all sides, and has no connection or communication whatever with the cavity of the germ-sac, being inserted between its layers. But we are not to suppose that it is throughout the entire substance of the germ even that the fœtus is developed; this process being confined solely to its interior, which we denominate the *medullary space.* The amniotic membrane, like all the serous membranes, is to be found with the earliest appearance of the fœtus.

They are developed, simultaneously with its origin, around the organs referred to them, without necessitating any inversion or secondary surface-growth.

According to Engel's explanations, the amniotic membrane originates as follows:

Imagine a parent-cell with its two secondary cells, in which a widening of the interval between the secondary cells has formed an internal space. This medullary space receives the first germs of the fœtus.

FIG. 4.

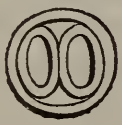


FIG. 5.

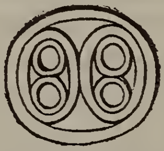
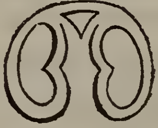


FIG. 6.



As the development of the fœtus progresses, the extremities of the secondary cells come into contact on its dorsal, but not on its abdominal aspect, and the surfaces of contact gradually flatten out, until, finally, the partition wall which they form breaks down, and the amniotic tunic is complete. Meanwhile, on the abdominal aspect of the fœtus the formation of new cells has been steadily progressing.

A comparison of the accompanying figures readily produces the impression of the gradual growth of a sac around the fœtus in such a manner as finally to envelop it completely. The probable connection of this sac with the tegumentary covering of the fœtus also suggests itself.

FIG. 7.

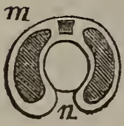


FIG. 8.

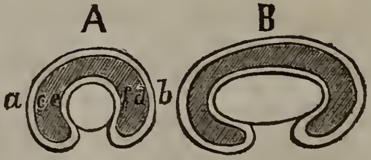


Fig. 4. A parent cell with its two secondary cells, designed for the formation of the amnion.

Figs. 5 and 6. Formation of an interspace by the separation of the secondary cells.

Fig. 7. (*m* and *n*) Bowl-shaped interspace between the two secondary cells.

Fig. 8. Coalescence of the two secondary cells posteriorly, but not on the abdominal aspect of the fœtus.

The amniotic tunic, therefore, originally envelops the fœtus as a simple, broad layer of soft, plastic material, which assumes a membranous consistence only on the addition of alcohol. When, with the growth of the embryonal sac, this layer also becomes broader, and separates into several segments, then for the first time is its proper membranous structure appreciable; the external layer and that next the fœtus increasing in thickness and becoming organized, (Fig. 8, A, e, f,) while between these two membranous lamellæ (f, d, c, e,) is found the amniotic fluid.

This fluid soon becomes much diluted in consequence of a constant aqueous secretion into the cavity, and collects in very noticeable quantity. The plasma, from which the amniotic tunic is developed, is present from the earliest origin of the fœtus.

The external layers of the germinal stratum now assume a membranous appearance, and the substance contained between them finally disappears entirely.

They are thus brought into contact, and unite to form the vascular layer of the germ, which consists, therefore, of two layers, which coalesce with the external wall of the germ-sac, on both its upper and lower surfaces. The vascular and the animal or serous layers of the germ attain consequently quite another significance from that usually ascribed to them. They are only transition formations, having nothing to do with the development of the system, the germs of which, according to the usual descriptions, they are supposed to contain.

We hence conclude that the first fœtal development takes place in the embryonal sac, (the external portion of which becomes the amnion,) and, to limit it still farther, in the medullary space of this sac. A transverse cleavage of the fœtal blastema produces two new secondary blastemas, giving to the transparent fœtal area an oval form. (Fig. 3, *a.*) The blastema of the medullary space is called by Engel the central germ. This does not communicate with the cavity of the vitelline sac, but forms a distinct ellipsoidal vesicle, which, by means of a longitudinal cleavage, is divided into two segments, presenting four spaces: A, the primitive or dorsal furrow; B, the inferior or abdominal furrow; and CD, the lateral spaces. (Fig. 9.)

FIG. 9.

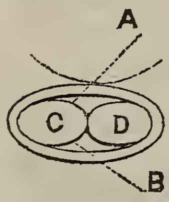


Fig. 9. The central germ of the embryonal sac.

The central germ within the amniotic tunic, which has already formed a grooved inversion near the abdominal surface of the fœtus, is composed of three principal groups of vesicles, which subsequently develop into germs. Of these Engel has denominated one (A, Fig.

FIG. 10.

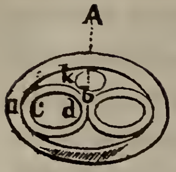
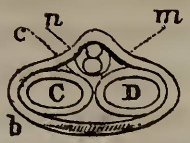


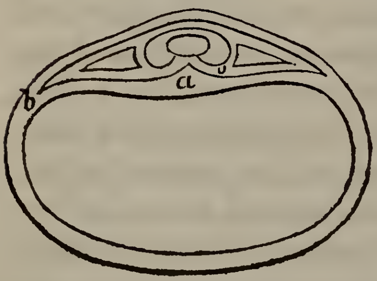
FIG. 11.



10,) the germ of the dorsal column: this lies in the plane of the long axis of the future fœtus; the two others (C and D, Fig. 11,) are denominated the visceral germs or visceral sacs. While the former is being developed into the spinal marrow, and the membranes, bones and muscles appertaining to it, the latter begin their transformation also, and become the thorax and abdomen of the fœtus, with the organs therein contained. On a transverse section of each visceral germ (C, D, Fig. 11,) a perceptible difference is found to exist between its peripheral and central portions. The peripheral portion coagulates upon the addition of alcohol, and assumes a white color and membranous consistence.

The central portion, on the contrary, appears corrugated, readily falls out of the ring which surrounds it, and has early the yellow color of the yolk.

FIG. 12.



The open portion of the abdominal furrow of the fœtus is filled with a similar yellow mass, (Fig. 9, B,) and the germ still adheres to its vascular membrane, which, at that point, opens close to the yolk. (Fig. 12, *a*.) The appearance produced by these circumstances is as if the germ were in immediate contact with the vitelline sac, and were gradually severing itself from it.

If, during the first period of its development, we examine the germinal stratum, with the embryonal sac (vascular area, opaque and transparent fœtal areas,) from above, we distinctly recognize, in the vessels which first make their appearance, the original furrowings of the germinal stratum, and in the courses followed by the vessels the interspaces between the contiguous germs.

FIG. 13.

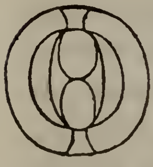
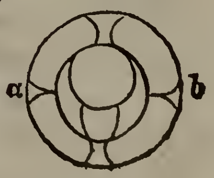


FIG. 14.



The terminal vessel, (Figs. 13 and 14,) known under the name of vena or sinus terminalis, corresponds to the circumference of the entire germinal stratum, and consequently lies at the end of the great

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Fig. 10. (*A*) The germ of the dorsal column.

Fig. 11. (*C* and *D*) Visceral germs.

Fig. 12. (*a*) The germ connected with its vascular membrane, but not with the yolk.

Figs. 13 and 14. View of the Vena Terminalis.

longitudinal cleft by which it was divided before the formation of the embryonal sac had yet taken place.

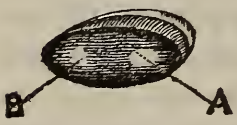
This sinus terminalis curves like a bow towards the head of the fœtus, and thence towards its abdomen, and, following the longitudinal groove, reaches the latter in the inferior groove of the stratum.

Again, after the second segmentation of the germinal stratum is accomplished, vessels are observed proceeding from the abdominal region of the fœtus into the interspace between the anterior and posterior blastemal masses of the stratum and the embryonal sac on each side. These vessels, leaving the sides of the embryo at right angles, and still following this interspace, spread out in the plane of the stratum. In the mean time, in the stratum itself the capillary vascular apparatus has been developed in the interspaces of its numberless cells, and the first circulation has begun.

If now we examine the central germ, with its envelopes lying in the germinal stratum, laterally and in its longitudinal aspect, we see making its appearance from the middle of the stratum, (Fig. 12, *a*,) in the furrow to be found at this point, a vessel [a, b,] which runs in front of the capital portion of the embryonal germ, towards the extremities [superior and inferior] of the germ-sac. This is the lateral view of the vessel. (Fig. 14, *b*.) Running through the apparent inversion of the amniotic membrane—[this funnel-shaped inversion of the amniotic membrane is known under the name of ductus omphalo-vitellinus]—it there becomes connected with the visceral vessels. This vessel subsequently becomes the arteria meseraica, [mesenteric artery.]

In the central germ itself, meanwhile, as far at least as the anterior visceral sac is concerned, the formation of two new cells and their cleavage has taken place, all the interspaces thus formed between the cells being designed for the reception of the vascular canals.

Fig. 15.



In the subsequent development of the several organs of the embryo, Engel assumes the appearance and subsequent distinct limitation of numerous germ-cells, of a similar character to those just discussed.

II. Smooth muscular fibres respond to irritation not by a transitory contraction, but by tetanus. During its duration the same fibre can again be irritated by an influence of equal power with the first. Continued irritation increases the contraction to a certain point, which, being reached, an increased influence is required to continue the result.

Fig. 15. Cleavage of the anterior visceral sac of the central germ.

The intensity of electric irritation is, in its influence on smooth muscular fibres, totally independent of the varying density of the current. The contractions are the same whether the density of the electric current be gradually increased for fifteen seconds, or the influence suddenly interrupted. But, within certain limits, the power of the influence increases with its duration.

A smooth muscle shows no motion whatever when it is within the reach of inductive electricity, and the rolls are slowly advanced towards each other, until the muscles of the operator's hands are attacked by irresistible tetanus. The same muscle responds with energetic contractions to a gradually increased constant current long before this affects the nerves of the human tongue.

The effect is proportional in increase to the difference in the densities of the two currents between which it varied. With a proper selection of the intensity of the current and of the intervals, a very slow increase may produce twice as powerful a contraction as the momentary interruption of a weaker current.

Irritation may consequently be produced by an influence of short duration, provided the current has a certain power. Very quick, alternate shocks must be very powerful to affect smooth muscular fibres.

Sulphuric acid produces chemical irritation of these fibres—a solution of common salt not.

III. In the lying-in wards of Bellevue there are now two infants reported by Dr. Geo. T. Elliot, Jr., who were born with teeth, viz.: William Hoffman, sixth child, weight at birth six and one-half pounds, puny, fully developed; right middle incisor in lower jaw well formed and protruded, but placed athwart the jaw.

Annie Morse, first child, weighed at birth seven pounds, fully developed; two middle incisors in the lower jaw, both well formed, but loose; right incisor set obliquely in the alveolar tissue.

IV. The author of this interesting paper, the result of much patient thought and careful investigation, boldly claims for it an importance which can hardly be accorded to any discovery in our science since that of Dr. Bright. He says: "*What the discovery of the function of urea has done for diseases which now come under the head of uræmia, the discovery of the function of Cholesterine may do for the obscure diseases which may hereafter be classed under the head of Cholesteremia.*" And if his postulates be sustained by future investigations, and stand the test of time and the siftings of foreign experimentation, his claim will prove a just one, and America will have good reason to pride herself upon having added so useful a contribution to the sum of the world's knowledge. Having exhibited the lamentable state of our ignorance upon the subject, he proceeds to state the purpose of his essay, as follows:

"We will find the cholesterine to be the most important excrement separated by the liver, as the urea is the most important one separated by the kidneys; and the study of this substance will necessarily involve the depurative function of the liver. I will therefore begin with the cholesterine, and endeavor to show where it is formed in the economy, by following the blood in its passage through various organs. This will necessarily involve a description of the chemical processes which have been employed in its extraction. I will then endeavor to show where the cholesterine is removed from the blood, by the same method of investigation. The next step will be to follow it out of the body, and study the change which it undergoes in its passage through the alimentary canal. Having described the process of formation in the tissues, separation from the blood by the liver, and final discharge from the body, I will endeavor to show, finally, the effects of interruption of this function of the liver upon the economy. This will lead us into pathology, and a host of diseases will arise which may be dependent on a disturbance of the excretory function of the liver. We will be enabled to draw the line more closely between conditions in which there is resorption simply of the innocuous coloring matter of the bile, and those diseases in which there is a failure to separate the excrements from the blood. These conditions, it is well known, are widely different as to gravity, and the distinction between them is of great importance. The latter condition, characterized by the retention of cholesterine in the blood, will be treated of under the name of *Cholesteremia*."

Passing by the History of Cholesterine and the mode of obtaining it from the blood, we proceed to give the author's view of its functions:

"*Cholesterine is an excrementitious product, formed in great part by the destructive assimilation of the brain and nerves, separated from the blood by the liver, poured into the upper part of the small intestine with the bile, transformed in its passage down the alimentary canal into stercorine,* (the seroline of Boudet, a substance differing very little from cholesterine,) *and, as stercorine, discharged by the rectum.*"

The question of its origin is thus stated:

"The next question which naturally arises is the origin of the cholesterine. When we examine the situations in which it is found, we find that it exists in largest quantity in the substance of the brain and nerves. It is also found in the substance of the liver, probably in the bile which is contained in this organ, and the crystalline lens, but with these exceptions it is found only in the nervous system and blood. Two views present themselves with regard to its origin. Cholesterine is deposited in the nervous matter from the blood, or is formed in the brain and taken up by the blood. This is a question, however, which can be settled experimentally, by analyzing the blood for cholesterine as it goes to the brain by the carotid, and as it comes from the brain by the internal jugular. The cholesterine being found also in the nerves, and, of course, a large quantity of nervous matter existing in the extremities, it is desirable at the same time to make an analysis of the venous blood from the general system."

A series of experiments, preformed upon a dog, with a view to determine this point, he considers, "demonstrate the following facts: 1. That the brain contains a large quantity of cholesterine, (which had, however, been previously established.) 2. That the blood going to the brain contains a small quantity of cholesterine, while the blood coming from the brain contains a large quantity. 3. That the blood coming from the lower extremities and pelvic organs contains more cholesterine than the blood carried to them by the arterial system."

Further experiments which are detailed lead him to conclude that this substance "*is produced in the brain, and thence absorbed by the blood.*"

An analysis of the blood drawn from the paralyzed and the sound sides of paralytics affords evidence that the nervous tissues throughout the body have a part in its formation; while the following experiment is considered to prove that cholesterine is separated from the blood by the liver:

"*Experiment* 8.—A good-sized bitch (pregnant) was brought completely under the influence of ether, the abdomen laid freely open, and blood drawn, first from the hepatic vein, and next from the portal vein. The taking of the blood was entirely satisfactory, the operation being done rapidly, and the blood collected without any admixture. A specimen of blood was then taken from the carotid to represent the blood from the hepatic artery.

The three specimens of blood were then examined in the usual way, for cholesterine, with the following results:

	Blood. *grains.*	Cholesterine. *grains.*	Cholesterine in 1000 pts.
Arterial blood	159.537	0.200	1.257
Portal vein	168.257	0.170	1.009
Hepatic vein	79.848	0.077	0.964

Per centage of loss in arterial blood in its passage through the liver..23.309
Do. do. do. of portal vein.................4.460

* * * * * * * *

Another link, then, is added to the chain of facts which make up the history of cholesterine. The first is, that

Cholesterine is formed in the brain and nervous system, and absorbed by the blood.

The second, which has just been proven, is, that

Cholesterine, formed in these situations, and absorbed by the blood, is separated from the blood in its passage through the liver.

The next question, in following out this line of inquiry, is, What becomes of the cholesterine which is separated from the blood? This question is very easily answered, and necessitates only an examination of one of the products of the liver—the bile."

In solving this problem, two separate and distinct functions are claimed for the bile:

"It seems to me that enough has been said with regard to the function of the bile to convince the reader that this complex fluid has two important elements which have two separate functions:

"First. *It contains the glycho-cholate and tauro-cholate of soda; which are not found in the blood, are manufactured in the liver, are discharged mainly at a certain stage of the digestive process, are destined to assist in some of the nutritive processes, are not discharged from the body, and, in fine, are products of secretion.*"

"Second. *It contains cholesterine; which is found in the blood, is merely separated from it by the liver, and not manufactured in this organ, is not destined to assist in any of the nutritive processes, but merely separated to be discharged from the body, and is a product of excretion.*

"These two propositions, and more especially the second, being established, it becomes our task now to follow out the cholesterine after it has been discharged from the liver into the small intestine. If it be discharged from the body, it must be by the rectum; and, to complete the history of cholesterine, we find it necessary to study the fæces."

Examining the fæces, then, both historically and experimentally, the author finds an excrement of great importance, heretofore called *seroline*, by the few French physiologists who have noticed it at all. To this substance he proposes to give the name STERCORINE, as indicating "its excrementitious properties, and the channel by which it is evacuated." Analyses of the decolorized fæces of an individual suffering from jaundice, and of fæces from the same patient after they had become normal, lead to the conclusion that this last substance is "*produced by a transformation*, connected with the digestive act, of the cholesterine of the bile." Hence the following propositions:

"1. *Cholesterine is an effete material, produced by the destructive assimilation of nervous matters, and absorbed by the blood.*

"2. *It is separated from the blood in its passage through the liver, enters into the composition of the bile, giving this fluid its excrementitious character.*

"3. *It is poured with the bile into the upper part of the small intestine, when the process of digestion induces a change into stercorine; in which form it is discharged by the fæces.*

"4. *Stercorine, the great excrementitious element of the fæces, is one of the most important excrements produced by the waste of the system.*"

The pathological importance of cholesterine is thus stated:

"*In simple cases of jaundice we have a resorption of the coloring matter of the bile from the excretory passages.*

"*In grave cases of jaundice, which almost invariably terminate fatally, we have a retention of the cholesterine in the blood, or cholesteremia.*"

And farther:

"Examination of the blood and fæces of the patient suffering under cholesteremia, with jaundice, thus leads to the following conclusions:

"1. *The cholesterine is enormously increased in the blood, showing that the structural change in the liver has interfered with its removal from that fluid.*

"2. *The stercorine is correspondingly diminished in the fæces, showing that the cholesterine is not discharged in normal quantity into the alimentary canal.*"

The following are the general conclusions at which the author arrives:

"1. Cholesterine exists in the bile, the blood, the nervous matter, the crystalline lens, and the meconium, but does not exist in the fæces in ordinary conditions. The quantity of cholesterine in the blood of the arm is from five to eight times more than the ordinary estimate.

"2. Cholesterine is formed, in great part if not entirely, in the substance of the nervous matter, where it exists in great abundance, from which it is taken up by the blood, and constitutes one of the most important of the effete or excrementitious products of the body. Its formation is constant, it always existing in the nervous matter and the circulating fluid.

"3. Cholesterine is separated from the blood by the liver, appears as a constant element of the bile, and is discharged into the alimentary canal. The history of this substance, in the circulating fluid and in the bile, marks it as a product destined to be gotten rid of by the system, or an excretion. It pre-exists in the blood, subserves no useful purpose in the economy, is separated by the liver and not manufactured there, and, if this separation be interfered with, accumulates in the system, producing blood-poisoning.

"4. The bile has two separate and distinct functions dependent on the presence of two elements of an entirely different character. It has a function connected with nutrition. This is dependent on the presence of the glycho-cholate and tauro-cholate of soda, which do not pre-exist in the blood, subserve a useful purpose in the economy, and are not discharged from it, are manufactured in the liver and peculiar to the bile, do not accumulate in the blood when the function of the liver is interfered with, and are, in short, products of *secretion.* But it has another function connected with depuration, which is dependent on the presence of the cholesterine, which is an *excretion.* The flow of the bile is remittent, being much increased during the digestive act, but produced during the intervals of digestion, for the purpose of separating the cholesterine from the blood which is constantly receiving it.

"5. The ordinary normal fæces do not contain cholesterine, but contain *stercorine,* (formerly called seroline, from its being supposed to exist only in the serum of the blood,) produced by a transformation of the cholesterine of the bile during the digestive act.

"6. The change of cholesterine into stercorine does not take place when digestion is arrested, or before this process commences; consequently, stercorine is not found in the meconium, or in the fæces of hibernating animals during their torpid condition. These matters contain cholesterine in large abundance, which also sometimes appears in the fæces of animals after a prolonged fast. Stercorine is the form in which cholesterine is discharged from the body.

"7. The difference between the two varieties of jaundice with which we are familiar—the one characterized only by yellowness of the skin, and comparatively innocuous, while the other is attended with very grave symptoms, and is almost invariably fatal—is dependent upon the obstruction of the bile in the one case, and its suppression in the other. In the first instance, the bile is confined in the excretory passages, and its coloring matter is absorbed; while in the other, the cholesterine is retained in the blood, and acts as a poison.

"8. There is a condition of the blood dependent upon the accumulation of cholesterine which I have called *Cholesteremia.* This only occurs when there is structural change in the liver, which incapacitates it from performing its excretory functions. It is characterized by symptoms of a grave character, referable to the brain, and dependent upon the poisonous effects of the retained cholesterine on this organ. It occurs with or without jaundice.

"9. Cholesteremia does not occur in every instance of structural disease of the liver. Enough of the liver must be destroyed to prevent the due elimination of the cholesterine. In cases in which the organ is but moderately affected, the sound portion is capable of performing the eliminating function of the whole.

"10. In cases of simple jaundice, when the fæces are decolorized and the bile is entirely shut off from the intestine, stercorine is not found in the evacuations; but in cases of jaundice with cholesteremia, the stercorine may be found, though always very much diminished in quantity; showing that there is an insufficiency in the separation of the cholesterine from the blood, though its excretion is not entirely suspended. After death, but a small quantity of bile is found in the gall-bladder."

The Italian Campaign of 1859—*Medico-Chirurgical Letters from General Head-Quarters.* By Dr. A. BERTHERAND, Principal Medical Officer of the First Class, etc., etc. Translated for the AMERICAN MEDICAL MONTHLY.

LETTER VIII.

SURGICAL RÉSUMÉ.

Flight of Conical Projectiles—Contusions—Extraction of Balls—Hæmorrhages—The Trephine—Amputations—Resections—Internal Injuries—Army Ambulances—Temporary Hospitals in Italy.

To DR. E. BERTHERAND:

My Dear Brother—The special object of my former letters has been to sketch the general aspect of our ambulances after each encounter, and that of the hospitals, in which I soon rejoined the wounded, and, at the same time, briefly to run over the striking features of the gunshot wounds which most attracted my notice in a clinic made of necessity *on the double-quick.*

To-day, on the eve of taking my departure from this field of observation, where there is still so much to be gleaned, I should leave, it seems to me, a much wider gap in my necessarily unfinished task, did I not recapitulate, in a few comprehensive summaries, the practical conclusions, which are the natural corollaries from so many facts, presented, until now, without method, and solely in the order of their chronological succession.

Occupied from 1854 till 1857 with the active ambulances of the

Army of Africa, I did not have the honor of sharing, with the great majority of my colleagues in the medical service, in the labors of the siege of Sebastopol, or in the experience, which so vast a theatre must have afforded, of the new conditions introduced into the surgery of camps, by the modern improvements in military pyrotechnics.

The Arabs and Berbers, with whom our troops have had to contend for the last twenty-nine years in Algeria, possess no artillery, and make little use of the bayonet or sword, in either attack or defence. The stone spheroids, with which their clumsy guns are loaded, are yet, and will, for a long time to come, be spherical balls. I have, therefore, during my long service under the tent, in Kabylia, as well as in the Atlas and Mitidja, had to treat only wounds made by this latter class of projectiles. Among the wounded of the enemy who have remained prisoners in our hands, I have, perhaps, had the opportunity of examining a dozen cases of wounds produced by the bursting of bombs from our own field-pieces, or the cylindrical bullets of our rifled carbines.

The new study to which I came to devote myself on the battle-fields of Italy had, therefore, all the charm of novelty for me; you would judge so from the following extracts from the documents which it has furnished me the opportunity for collecting.

Properly to account for the flight of conical projectiles, and their effect upon the tissues, we must not lose sight of the fact that they owe the characteristic attributes of their superiority, namely, *accuracy* and *length* of range, to the peculiar manner in which the impulse is applied to them. The efficient cause of these advantages is found in the grooved arrangement of the interior of the tube in which the explosion takes place. This is so essentially true that analogy and experience soon led our artillerists to adapt the system of grooving to their pieces.

The nature of the flight of the new balls—different from that of the old spherical balls, but also double—results: 1st. From an initial expulsive force which projects them in the direction of their longitudinal axis; 2d. From an impulse which causes them to turn upon themselves about this same axis; the final resultant is a *spiral* or *cork-screw* motion.

In order that the body thus impelled may maintain its rectilinear course, we have lightened its base by *hollowing* it out, so that the centre of gravity is brought nearer the anterior part of the cone. The tendency to oscillate at a certain distance from the point of discharge is thus prevented. The Austrians fulfill the same indication by means of two or three grooves cut into the surface of the cylindrical end of the bullet. I have in my possession several cylindro-conical balls, extracted either by myself, or under my immediate observation, from regions where they had come in contact with osseous structures, and have discovered that, in the greater number of them, the cracks, cleavages, flattening, or other alteration of shape, are situated upon the summit or on the sides of the conical portion of these projectiles. I consider, then, until I am better informed, that penetration by the point is the rule, and by the base the exception. And, let me ask in passing, if this be not the case, what great advantage has our artillery gained in substituting the oblong and pointed form for the spheroid of the primitive bullet, with a view to increased efficiency in siege-firing?

This view of the flight of cylindro-conical balls authorizes me in regarding what has been said as to the greater average severity of the wounds which they make as compared with those produced by the round balls, as much too absolute. In support of my opinion, I shall cite gunshot wounds which affect the soft parts only. Is it not true that a sharp body should separate the fibrous layers more easily and pursue a more regular course with less violence and less havoc than an obtuse mass, even were the latter irreproachably spherical?

From the form and mode of penetration of the new projectiles, I should deduce, moreover, the following conclusions, which, I may say, have been confirmed by observation:

1st. The point of conical projectiles, striking the spongy portion of a bone, (an extremity,) has a better chance of penetrating without splintering; if, on the other hand, it is a compact portion (diaphysis) which is struck, the risks are that the fragments will be numerous and of large size.

2nd. The spiral motion of the conical cylinder affords less opportunity for reflection from resistant surfaces than do the form and conditions of motion of the spheroid.

3d. *A priori*, the orifice of penetration of a Nessler ball should be smaller. Apart from this difference, which has not often appeared to me to be perceptible, there is another of more importance—it produces less contusion around the opening. As far as their exit is concerned, the conditions are the same as for other balls; the disadvantage here inclines rather to the side of the new projectiles. The resistance which they have met in their passage through the tissues tends to cause them to deviate from their course, and when they reach the integument, to open a way of escape for themselves, instead of perforating it with a sharp point, they often present the diameter of the base, or even that of the side, more or less oblique, but always increased.

Like round balls, they split against hard and sharp, or cutting, bony surfaces, with which they came in contact. A number of wounds figure on our notes, in which we were able to extract only portions of lead, equivalent to scarcely a quarter or a fifth of the entire ball. You may say, I know, that the fragmentation in these cases may very possibly have occurred outside of the body, and that the wound may have been caused by a ricochet. But—to resolve every doubt—I preserve most preciously a ball, cut into two nearly equal halves, from summit to base, by the crest of the left tibia, on which I found it clasped, about two fingers' breadths above a simple fracture of the bone. The two segments held together by only a very thin bridge of metal. A little greater force, and the section would have been completed.

The alterations in form, so varied and so curious, which the projectiles removed from wounds present, have led us to collect a number of them, which we have placed in the hands of the Surgeon-in-Chief, Baron Larrey, to be deposited in our name in the Museum of the Military School of Medicine of Val-de-Grace. Added to the already important collection furnished by the Surgical Corps of the Crimean Expedition, these specimens will familiarize our young comrades of the school better than any description, with appearances, a preparatory notion of which is so serviceable before encountering the difficulties and surprises attendant on the exploration of gunshot wounds.

Contusion, which is unquestionably the simplest of all wounds produced by fire-arms, is usually due to a projectile which has reached the extreme limit of its flight. We have also observed it, however, under other conditions; as, for instance, the passage of a ball over a soft, yielding surface, in a direction parallel to that surface—the weakening of the force of a blow by the resistance of the walls of a cavity, as of the abdomen—the interposition of an article of clothing, of equipment, or any object whatever, between the missile and the point of contact. A very curious example of this last class of accident was presented, after Solferino, by M. B., Chief of the Battalion of the 74th Regiment of the line. A ball had broken in two the scabbard of his sabre, on the outer side of the left leg, immediately against the crest of the tibia.

A careful examination of a considerable number of military contusions of the first and second category does not recall to me anything especial with regard to conical balls. The ecchymosis, which is one of the most constant phenomena of contusions, assumes an individual character, in extent, deep discoloration, prominence, and sharpness of outline, when produced by a bullet or a fragment of a shell. I have had occasion to notice a number of sanguineous effusions, which in these respects resembled, almost deceptively, erectile discolorations of the skin, and which might readily have been taken for *nævi materni.*

When the contusion is situated upon the walls of a cavity, not only is the cutaneous ecchymotic discoloration sometimes absent, but this aspect of affairs, at first sight so favorable, may give way to symptoms of the internal rupture of vessels or viscera, and result in sudden death, all the more startling from the fact that ignorance of concealed injuries has not permitted us to form a prognosis.

The extraction of conical balls has seemed to me, if not always, at least very often, to offer obstacles relatively greater than that of the round. If you wish to remove them by the orifice of penetration, you find that the foreign body has changed its direction, in virtue of its own motion, of inflammation, or of the action of the teeth of your forceps. If you endeavor to find it by a counter-opening, the same considerations render it necessary to give greater extent to the incisions.

The cases of wounds of arteries observed among our men rise to quite an unusual proportion, if I refer to authors who have treated of the wounds of warfare, and to my own recollections of another theatre of military surgery.

To the cases of Commandant De L., who died of hæmorrhage at the division hospital at Alexandria, on the 29th of May; of Lieutenant P., of the Zouaves of the Guard, seen at *San Martino* after Magenta; of the officer in whom Dr. Leroy ligated the brachial at Castiglione, I ought to add, also, (to confine myself to instances which occurred under my own eyes,) that of Captain O., of the Algerian Sharpshooters. This unfortunate officer, whose forearm was pierced by a ball at its upper third, between the bones, was subsequently seized with a loss of red blood, which was attributed to injury to the interosseous artery. After vain efforts to control it by the application of Sognoroni's compressor, the usual hæmostatics, immediate and distant compression, it became necessary to tie the brachial. Notwithstanding this resort, which was supposed to be final, the hæmorrhage soon returned. Being on my way to Brescia on the 14th of July, I was requested to see the case. He was lodged with a worthy *confrère* of the city, who had tended his pillow, day and night, his wife and two daughters relieving him from hour to hour, as occasion demanded, in order to maintain digital compression on the injured limb. After assuring myself of the reality of the ligation of the principal trunk, I probed the wound, and removed with my forceps a fragment of lead of the shape and size of a lentil, somewhat flattened. I then passed a tent, soaked with the solution of perchloride of iron, into the track of the ball. The blood ceased flowing. It occurred to me that the lower extremity of the arteriole might have been the source of the difficulty; I therefore advised the application of a glove bandage and compresses, methodically graduated, over the anterior surface, as well as in the interosseus space of the limb, up to the level of the wound, the hand elevated, perfect quiet, and digital compression in the hollow of the axilla. Despite these precautions, the dressing, the second day after, became tinged with red blood, and the patient becoming weakened, it became inevitable, all resources having been exhausted, to resort to the cruel necessity of amputation. I have since learned that Captain O. sank under its exhausting sequel.

The persistence of the hæmorrhage in this very unusual case, after the ligation of the arterial trunk, and in spite of all the precautions for avoiding the return of the blood by the distal extremity of the divided vessel, cannot be attributed, in my opinion, to anything but an anomaly in the origin of the interosseous artery. May it not, for instance, have arisen directly from the brachial above the point ligated—or even from the axillary, as is sometimes observed in the collateral and terminal branches of the principal artery of the superior extremity? It is certainly to be regretted that no attempt was made, by nescroscopic examination, to find the solution of a problem of military surgery, so difficult, and fortunately so rare.

At Monte Chiaro, one of my Assistant-Majors, M. Gaujot, who had charge of a temporary hospital, in which the Austrian prisoners of Solferino predominated, performed or witnessed fifty-three grave amputations. He has returned, struck with the great mortality among the cases operated on, in consequence of secondary hæmorrhage. We await from our young colleague and his *confrères*, who were witnesses of these fatal terminations, circumstantial information with regard to a complication to which our nomadic service in the active ambulance has not left us leisure to devote a proper degree of attention.

The wounds of the chest healed, or on the way to ultimate cure, which have been mentioned in the course of this correspondence, are not the only ones which have fallen under our notice. Assistant

Surgeon-Major Miche possesses a very beautiful example, which I have strenuously urged him to publish.

The operation of trephining, which the works of Gama and Baudens have so greatly contributed to bring into disrepute with the rising generation of army surgeons, has been performed, as far as I know, but a small number of times. I can only cite four instances of its application at the hospitals at Brescia, by my learned colleague and friend, Doctor Isnard. Three of the patients were saved, the fourth died.

It would be difficult for me to say, even approximatively, what has been the whole number of amputations of all kinds following our sanguinary engagements; what the proportion of amputations in continuity relatively to disarticulations and resections; what the proportion of amputations to resection, or finally of successes to failures.

In the active ambulances, one circumstance entirely out of the reach of our surgical skill, and which, nevertheless, from the outset of the campaign, received all our attention—I refer to the absence of instruments for special operations in our caissons—often prevented us from removing fragments from an articular extremity, which did not involve the body of the bone beyond the epiphysis. The resection-cases did not arrive at the General Head-Quarters until the 2nd of July, at Valeggio, a whole week after the terrible day of Solferino. If I refer with particularity to this fact, it is simply that it may not be inferred from the insignificant number of resections attempted on the battle-fields of Italy that we voluntarily discarded a class of operations in which, for my own part, I met with such marked success in Algeria.

In the absence of accurate and full figures on the general results—as to wounds, general mortality, and that attending the capital mutilations—here are a few partial estimates which may serve to anticipate the general report, and to support the presumption of satisfactory final averages. One of them refers to the most pitiless of all amputations, that of the thigh. On the 9th of August last, out of ten operations at *San Filippo*, M. Gherini and his colleagues could count seven successful ones. After Solferino, more than 17,000 French, 14,000 Italians, and about 1,500 Austrians (say 33,000 wounded or sick) entered the hospitals of Brescia; fourteen consecutive amputations were performed. From the 6th of June until the present time, a period embracing the actions of Magenta, Melegnano, and Solferino, Milan received in round numbers, 21,000 French, 6,000 Italians, and 7,000 Austrians; total, 34,000 wounded or fever patients. Of these, 29,000 have left cured, or been transferred as convalescent to other places;

4,000 are still under treatment. The mortality has not risen above 1,400 individuals, a proportion of less than 4 to 100!

In these hurried notes, I cannot give much space to internal affections. The physicians of the hospitals of Alexandria and Turin, of Genoa and Marseilles, at a distance from the accidents of the war, and more especially charged with the treatment of those patients whom fatigue or physical disability always draw off from the army in great numbers just before or after the first encounters, cannot fail soon to afford us the facts on this subject from the statistics which they are patiently collecting.

But I may be permitted to say, unofficially, even at this early date, that during the entire course of this glorious campaign, which has been so rapidly brought to a close, the Army of Italy, the effective force of which reached the number of 218,000 men, has never counted more than a very limited minority of unserviceables from such causes.

And when one thinks of the unfavorable circumstances under which it was necessarily formed, brought together by forced marches, or transported across the sea at a moment's notice, from the southernmost cantonments of Algeria, and the garrisons of the metropolis, in the North, this becomes almost wonderful. It is true that, during the last few days, the appearance of certain febrile or intestinal affections in the divisions encamped in the neighborhood of Pavia and Plaisance, has been announced. But this is undoubtedly the effect of the at present excessively high temperature which scorches the plains of Lombardy. The counsels of hygiene must be heeded. To the monotony of the halt, which is dragged out under the heat of the sun, and the burden of arms, rations, and munitions, have succeeded the day passed listlessly in the tent, and the night without excitement or anticipated alarm; the night of *slumber*, that indispensable restorative of the body, which might be said to have been unknown, even despised, by our soldiers on the campaign, as though to sleep were repugnant to the impatience of their passionate energy. Already, here at Milan, the entries into the hospitals have begun to decrease very sensibly; combining transfers and discharges, the entire number of sick and wounded exhibits a diminution of more than a fifth, as compared with the first part of the month. We have been able to restore to their original objects the spacious buildings of the *San Francesco* barracks, and anticipate the speedy closing of several of the temporary hospitals: the *Lieux-Pies*, the *Boys' Orphan Asylum*, the *Grand Séminaire*, and several others whose names escape me; they are so numerous that I have never been able to impress them all upon my memory!

The laudable desire of doing something for the relief of our brave soldiers, suffering from their wounds, the necessity of bringing to bear both the kindly emotions of the heart and the ingenuity of the brain, upon the labors and misfortunes which glory inevitably draws in her train, has led many of our brethren in France to address to us propositions, interesting in many respects, on the subject of improvements in the treatment of gunshot wounds. Both time and opportunity have, in most cases, been wanting to carry out our intention of experimenting on these new and ingenious methods, and we can only mention here with gratitude suggestions, on the merits of which we should not feel ourselves at present competent to pronounce understandingly. For example, the unique apparatus of our skillful colleague, Prof. Gaillard, of Poictiers, for all fractures of the inferior extremity—an apparatus whose simplicity and ease of inspection naturally find their indication in the busy and crowded hours which immediately follow great battles—the method of retaining the same class of fractures by means of plaster moulds, recommended to the notice of the Surgeon-in-Chief, Baron H. Larrey, by Dr. Giron, of Buzaringues, —the *sachets of charpie*, and *compresses of carboniferous paper*, extolled by MM. Pichot and Malapert, the humble forerunners of MM. Corne and Demeaux, in the famous, but still incomplete attempt to procure the absorption of pus, and the disinfection of suppurating surfaces—the *occlusory compressors* of Dr. Jules Seguin, for penetrating wounds of the chest, etc., etc.

The genius of Percy and Larrey during the wars of the Republic and the first Empire raised our ambulance system at a single stride to a degree of perfection which long made us the envy of all the military powers of Europe. For nearly thirty years of Algerian expeditions, it has been gradually adapted to the necessities of an essentially rapid and active strategy over a difficult country. Finally, having been greatly improved in the Crimea, the modifications in its *matériel*, which had resulted from a long and varied course of practical instruction, have been subjected to the test of the Italian Campaign.

For my own part, I cannot but approve the substitution of a single hanging caisson, for the multiplied models of vehicles which formerly constituted the *light caisson*, the *magazine-caisson*, and the *caisson* properly so called. The service has, in this particular, gained both uniformity and simplicity. The new caisson, with movable fore-carriage, when delivered of its contents, is transformed into a more manageable vehicle, and a less painful means of transport for the wounded.

I have no doubt that my colleagues in the army will have noticed, in their general reports, certain alterations to be made in its internal arrangements. To reproduce here, *in extenso*, the criticisms of details which have been suggested to me by the study of our rolling stock, would be an irksome, and, at present, a barren task. It will be more profitable, we believe, to reserve these observations for the time when the Ministry of War, always solicitous for the progress of its ambulant hospital system, shall think fit to call a council of the whole; our contribution shall then not be wanting. The useless breaking up of our surgical arsenal into a number of boxes in which the same instruments are unnecessarily repeated; the absence of certain instruments for prehension, appropriate to those operations in which the seizure of the shattered ends of bones with the fingers is so difficult, and sometimes so dangerous; the possibility of comprehending, in a single case, like that which is used in the marine service, these scattered instruments which are hereafter to be simplified, assorted, and completed, with a special view to ambulance practice; the exclusion, or at least reduction in the number of regimental knapsacks, bags, and canteens; of instrumental apparatus, which uselessly and burdensomely occupy the place of materials for dressing which are much more needed; conveniences for augmenting the always inadequate supply of nurses on field-duty—such are the principal points to which we should call especial attention.

I shall tell you nothing that you do not already know with regard to the installation of our wounded in the Piedmontese and Lombard hospitals. The French military authorities, in confiding their delicate mission to the hospital establishments of our allies, so well supplied with every resource, did not yield to considerations of economy or of personal convenience alone. Acting with the entire and intelligent approbation of the Surgeon-in-Chief, they showed a true practical understanding of the necessities which, born of the occasion, sprang up around them on all sides. In the precipitate haste which had whirled 200,000 men at railroad speed between the Alps and the Apennines, would it not have been both foolish and dangerous to have passed contemptuously by institutions ready prepared, for the sake of plunging into superhuman and probably useless efforts to form an organization, the least misfortune of which would have been, that it would certainly have been perfected too late to be of service? One fact, out of a hundred, will convince the most incredulous of the impossibilities of a course which they persist in regretting was not followed. Lombardy and Piedmont furnished 280 assistant surgeons to the hospitals of Milan alone—from the 6th of June to the end of August, 1859. How could we have spared from our active ambulances, the greater part of which were reduced to a third, or even a quarter of their ordinary force, this phalanx of subaltern practitioners, who are even now lacking to our hospitals in France, and whose absence would have been most painfully felt by those who, the day after a battle, beg for a simple dressing of their wounds, bought by the blood they have so generously poured out?

Committed, from the first, to a measure so wisely adopted, I obtained for my French colleagues the service of medical inspection of the Italian hospitals, opened to our soldiers. I saw in this arrangement a common sharing at the same time of incentive and of responsibility; an effective bond of union between the efforts of the two systems of surgery, French and Italian, blended, like the two nationalities, in a grand work of devotion; the one on the theatre of glory, the other on the common ground of suffering and of consolation. I purposely re-echoed myself the irritability and captiousness of suffering far from home and family. I have reread with care the terms in which my pen has written down my well-considered opinion on this matter—is it possible to discover in it the least indication of want of confidence or mistrust of my honored colleagues of Piedmont and Lombardy? I call them to witness—has not this common participation in the treatment of the wounded resulted, on the whole, to the advantage of personal friendships, to the good of the service, and the welfare of the patients?

Clinical teachers of long standing in the branches which are so justly esteemed in the Italian universities, our civil *confrères* of Brescia and Milan, have, in more than one grave or obscure case, happily sought the authoritative, but always courteous, advice of our French military surgery, so worthily represented in the persons of MM. Isnard and Cuvellier. These reports of each day's occurrences recall to our memories, though all too indistinctly, no other souvenirs than those of a mutually congenial fellowship, forever engraven upon our hearts, and henceforth inseparable from the grand events which gave it birth! Your devoted brother.

MILAN, *August* 17, 1859.

LETTER IX.

The Lake of Como—Turin—Mont Cenis—The Hospitals of Cremona—Parallel between Primitive and Consecutive Operations—Sphacelus of Stumps—Tetanus—Hæmorrhage—Hospital Gangrene—Purulent Infection—Amputation in Fractures of the Femur.

To Dr. Billon:

My Dear Friend—It is now scarce two days since I recrossed the frontier, and here I am at work, putting down for your benefit my last impressions of our glorious tour through this beautiful Italy, already left too far behind us.

If my remembrance reaches you a little late, it is not because I have not dwelt often upon our old friendship, but for lack of time to write to you. Have I not had constantly on my horizon the summits of the Alps, now gray, now rosy, and now white,—majestic reminders of our walks of other days, over the passes of the Vosges, in the Black Forest, and even up the toilsome peaks of Switzerland? At Dezenzano, when, seated on the rampart of the gate, my eye lost itself in the mountainous defile, where the northern point of the stormy Lake of Guardo lies hidden,

> "Fluctibus et fremiter assurgens,"—(Virg.)

it always seemed to me as though I could see, rounding the steep crag of *Fluelen*, on the *Lake of the Four Cantons*, the steamer, on board of which we jumped at Weggis, on our return from the Righi.

And, if I descend, my dear friend, from the enthusiasm and ecstasy of the tourist to professional realities; could I, while studying, day by day, the hospitals, the physicians, and the diseases of Italy, omit a third reminiscence, including these same objects of investigation, which once led us together to London, to the clinics of Lawrence and Sir James Clark, and the museums of St. Thomas's, St. Bartholemew's and Guy's Hospital?

In penning you these lines to-day, it is not my intention simply to tell you by what route, more or less indirect, my roving humor has led me to trace out a path from Milan to Paris, by way of Como, Genoa, Turin, and Mount Cenis.

But as I journeyed, I have got possession, either myself or by letter, of new documents bearing on our medico-chirurgical campaign, and I owe my friendly correspondents an acknowledgment of the receipt of the learned communications which they have been good enough to send me.

Like all the cities of Italy, Como asserted its right to a share in the hospitable reception of the wounded of Solferino. It was but justice to this brave and intelligent city, one of the first of central Italy, to hoist the flag of independence. It has been an immense advantage to more than fifteen hundred sick or wounded men, whose convalescence has thus been permitted to profit by a sojourn in so delightful and healthful a spot.

Como owes to the immense sheet of water which bathes it on all sides, a softness and uniformity of temperature, which must be felt to be appreciated. Its drinking water comes down from the grand upper reservoirs of the Alps—not, as one might readily suppose, at first sight, from the subterranean drainage of the lake—and is well provided with salts.

At the time of my crossing into the region of Volta, its four principal hospitals and a large number of private houses contained about a thousand convalescents, intrusted to the medical care of the native practitioners under the intelligent supervision of Surgeon-Major Petit-Gand, assisted by Assistant-Surgeon Major Breese. Under the shade of a neighboring villa, Col. B., of the First Zouaves, whose remarkable wound in the head of the humerus, received at Solferino, we have already related, is pursuing the re-establishment of his health, terribly shattered by the consequences of so severe an injury.

The steamboat bell which sounds the hour of departure for Bellagio with a punctuality which leaves nothing to hope for, scarcely permits us to glance at the motley architecture of the cathedral, half Roman, half Gothic, its ancient paintings and the frescoes of its chapels; at the old tower of the *Broletto*, and the antique marble colonnade of the Lyceum,—for the lake awaits us with its gardens and villas, its gondolas and cascades. Here the outline of a little theatre reveals to the curious traveler the retreat of Madame Pasta; there stands the picturesque market-town of Torno, which you would say was built upon a raft; on the opposite side lie Torsiglia, Argegno, and the laurel thickets of Brienno. Farther along on our right opens a sort of bay, at head of which *Pliniana* commemorates the discovery made upon this spot by the celebrated Latin naturalist of an intermittent spring. At Como, Pliny, interpreting one of Nature's most whimsical freaks; at Sermione, on the lake of Guardo, the ruins of the house and gardens in which Catullus used to delight; the heights of Volta, the distant outline of Mantua, the loved home, if not the cradle, of Virgil—what an unlooked-for retrospect of classic memories the wanderings of the war had in store for us!

Shores more and more smiling glide by before our eyes as we proceed. We almost touch the promonotory of Bellagio, which constitutes the division line between the two lower branches of the Lake of Como and the limit of our projected excursion. On our right, the chisels of Canova and Thorwalsden have adorned the *Villa Sommariva*, embellished by many of the works of the great masters, but rich above all in that vigorous growth of olives and cedars which has gained for *Tremezzina* so just a reputation. From the summit of the rocky steeps, behind which Bellagio is sheltered, the eye embraces the most magnificent panorama. But it seems, my friend, that instead of a letter, I am in a fair way to compose a *guide-book*. I hasten, then, to transport you to Como, not, however, without having given a few brief moments to the *Melzi* palace, its exquisite paintings, and its busts and statues by Comolli.

On the 20th of August, forty-eight hours after leaving Milan, I again reached Genoa, to attend to some little details of business, and the next day my traveling orders directed me to Turin. The learned Professor Riberi was confined to his bed, when I called upon him, at different times, and I was compelled, with much regret, to give up the honor of paying my respects to the illustrious Nestor of Piedmontese surgery.

My short stay at Turin gave me too little leisure to allow of my visiting its objects of interest. I am, therefore, unable to entertain you with them at any length. I owe, however, a special mention to the University, with its immense library, its cabinets of medals of anatomy, of Natural History, and of antiquities, among which we notice a truly remarkable collection of Egyptian relics. Turin possesses a number of spacious, well-arranged hospitals, which were extensively used for transfers during the campaign. At the opening of the war, we had organized a French hospital in the buildings of an infantry-barrack, the internal arrangements of which seemed to me far inferior to the improvised establishments of Milan and Brescia.

On the 24th I jumped on board of one of the trains of the railway, which will, in a few years, pierce the base of the Alps, and subterraneously unite Italy and France. Meanwhile, the locomotive stops at Susa, and a heavy carriage, drawn by five pair of mules, is charged with the duty of hoisting us, *piano et sano*, to the summit of the pass of Mount Cenis, 6,780 feet above the level of the sea. Shortly before arriving at this culminating point, the traveler crosses the *plateau* of the mountain, properly so called, where are noticed the Hospice, the Inn of the "Grand Cross," and the Lake, abounding in fish, we were told, whence the Cenise, one of the tributaries of the Little Doire, takes its rise. Descending from the summit of Mount Cenis, on the east, to Lanslebourg, Lesillon, and Modane, the road runs for nearly the entire distance alongside of the rapid and noisy torrent of the *Arc*. From Modane to St. Jean de Maurienne, the descent becomes less and less steep, until we arrive at last in the centre of the valley, the first hereditary domain of the modern House of Savoy. The sombre and desolate aspect of this region is still further saddened by the presence of a miserable population, constantly deteriorating under the hardships of a laborious life upon a barren soil, and the baleful endemics of goître and cretinism.

You understand from this picture, my dear friend, that there is nothing here to detain the traveler who is separated by only thirty-six hours of cars, from the end of his journey, PARIS.

I had left too many subjects for study and investigation, in Italy, not to have taken precautions for continuing them by means of letter before my departure. Several of the documents which have been forwarded to me in consequence of these arrangements complete the surgical portion of this narrative in so interesting a manner that I cannot resist the temptation to close my correspondence with a few extracts from the letters of Surgeon-Major Sourier, of the 1st Class, 68th Line, and Assistant Surgeon-Major Lhonneur, of the General Head-Quarters, both employed in the hospitals of Cremona. Packed into every available conveyance that could be obtained in the city or its environs, the wounded of Solferino were hurried on to Cremona the day after the battle, suffocated by the heat and dust, and bruised by the jolting of the journey. In the course of a few days, ten thousand patients had been distributed among its hospitals, its convents, and its churches. In the laborious duty of ministering to so many sufferers, three important institutions fell to the lot of our learned fellow-laborer, Dr. Sourier—*Santa Chiara*, *Benedetto*, and *Corpus Domini*, in all containing 2,452 wounded, among whom were sixty-six cases requiring amputation, not to mention the ligation of several arteries, the extraction of numerous sequestra, etc. Among these transfers, there figured, besides, ten cases in which amputation had been performed before they were sent away, five wounds of the chest, and three of the bladder; none of the abdomen, doubtless, for the simple reason that the rapidity with which the fatal termination arrived prevented them from reaching Cremona.

M. Sourier recapitulates, as follows, with regard to nationality, the nature of the mutilation, and the final issue; the results furnished by the sixty-six capital operations which he had the opportunity of witnessing:

		Recovered.	*Died.*	
French.	Leg,	8	9	17 Recoveries. 15 Deaths.
	Thigh,	2	6	
	Finger,	1	6	
	Arm,	4	6	
	Shoulder,	2	6	
Austrians.	Leg,	11	10	14 Recoveries. 20 Deaths.
	Thigh,	3	8	
	Arm,	3	1	
	Shoulder,	3	1	

This excess in the comparative mortality, on the part of the Austrians, is to be explained by two causes: our artillery (rifled cannon) produced injuries more severe than did theirs; and, on the other hand, we must take into account the physical and mental condition of men picked up for the most part from the field of battle, where they had been abandoned by their friends.

The ten operations performed on the spot at Solferino gave nine recoveries; an eloquent result in favor of immediate amputation.

In order to show in a still more striking manner how the chances of success, after capital mutilations, diminish in direct ratio with the time which elapses between the reception of the wound and operative interference, "I have arranged," adds our correspondent, "the cases which have been received after amputation, or on which it has been performed in my service, by successive series of fifteen days, and have recorded in this way:

	Operations.		Successful.	Unsuccessful.
From June 24 to July 31,	17,	(4 capital,)	12	5
" July 1 to " 15,	30,	(11 ")	14	16
" " 15 to " 31,	14,	(7 ")	2	12
" Aug. 1 to Aug. 20,	5,	(2 ")	3	2
			31	35

" These figures speak louder than any argument."

The accidents which carried off those who had been operated upon at Cremona manifested themselves in the following order: sphacelus of the flaps—tetanus—hæmorrhage—conicity of the stump—hospital gangrene—purulent infection. I feel it my duty to cite M. Sourier *verbatim* on this point.

I. " *Sphacelus of the flaps*, which was rare in primitive amputations, did not ordinarily appear until two or three days after the removal of the limb—generally the leg—in front, and on that part of the surface of the skin which corresponds to the crest of the tibia. The fall of the eschar left the bone naked. Fortunately, this region, being vascular and full of vitality, granulates readily, and nearly always succeeds in forming, with the aid of the surrounding tegumentary flaps, a solid cicatrix. It must not be supposed that this partial gangrene depended exclusively upon insufficiency of the integument or of nutrient vessels, imprudently sacrificed in the course of the operation. Its cause was to be attributed much oftener, in our opinion, to general and local conditions: to mechanical attrition of the parts in traveling; to the general nervous prostration and the depressed vitality of the part; to a morbid saturation with putrefying matter, operating here, as the urine does in wounds of the penis and perineum. We may farther speak of anæmia, and perhaps a predisposition, dependent upon the individual constitution. . . .

"This complication occurred so frequently, (25 times,) that, attributing it also, to some extent, to the operative method employed, we substituted, in the later cases, for the classical circular amputation at the place of election, Professor Sedillot's procedure with the external flap. This modification was followed by excellent results.

II. "Five cases of tetanus made their appearance, three or four days after amputation of the leg, and all during the first two weeks of July; at which time, the traumatic irritation still exerted its full effects. The disease did not generally commence abruptly, with the formidable symptoms which so often characterize it. The trismus gradually attacked and impeded the movements of the lower jaw. Deglutition remained quite easy; there was little rigidity of the trunk or limbs.

"Whether because the acetate of morphia, administered for twelve days, had fettered the development of the disease, or because the disturbance of the system, produced by the loss of a limb, had induced a morbid condition of the absorbents, it is a fact that three of our tetanic cases lived fourteen days. . . . ."

Like M. Gherini at Milan, like ourselves and many of our colleagues in Algeria, M. Sourier, in imitation of Larrey—who, we may say, in passing, never *advised* amputation as a cure for tetanus—removed a fractured leg in which the tetanic complication seemed to have its seat. As has been observed in other cases, however, the affection continued its fatal course, not the less surely.

III. Hæmorrhage, which was an unknown occurrence among the amputations of Solferino, appeared at Cremona early in July, and continued, in an increasing progression commensurate with the time which had elapsed after the 24th of June. Including that from both arterial and venous sources, it appeared seventeen times, either during or immediately after the operation, or at some subsequent time—and by preference, in debilitated and anæmic subjects. We can understand, morever, how the action of the patient in bracing himself against the pain, or it may be the influence of the chloroform in arresting in the lungs the blood which accumulates in the right ventricle, renders the occurrence of syncope so much the easier when anæsthesia has deprived him of the resource of keeping up the circulatory movement by means of deep inspirations. "We may add," says M. Sourier, "that the inflammation developed an extraordinarily vascular condition of the traumatic regions, and evidently favored the afflux of blood to them. In general, the amputations which were preceded or followed by uncontrollable hæmorrhages resulted badly. Twice, under analogous circumstances, I ligated the femoral artery."

IV. "*Conical stump* occurred at Cremona, as an accident of the second period of the operations, "attacking about the eighth day those whose thighs had been amputated by the circular method, but in no instance those in whom the anterior flap method had been employed. In six of the cases noted, four resections of from two to three inches of necrosed bone were performed, but without success. The tissue, soon absorbed by suppuration, or by a peculiar process of mummification, again permitted the femur to project; but when once the inflammatory process had thrown out a disc of dead bone, the case got well."

I owe to the kindness of M. Lhonneur the details of the case of M. B., of the 4th Regiment of native sharpshooters, whose right thigh I amputated at Castiglione, after Solferino. The flap, which did not unite by first intention, having been separated by a large abscess, the femur pierced the skin, which had ulcerated by suppurative inflammation. Notwithstanding that there was a projection of four-fifths of an inch of bone denuded of periosteum, such strong adhesions had been formed posteriorly, that the denuded portion was immovably fixed. It is a question whether to await the tardy separation of this necrosed disc, which will probably be very tedious, or to perform at once a resection, which will shape up the stump, diminish the tendency to retraction, and subsequently facilitate the application of an artificial limb.

In my opinion, there is nothing to do but to await spontaneous separation, for experience has convinced me of the danger of reamputations. Moreover, the inconvenience of central adherent cicatrices, in respect to the application of an apparatus to the stump, is greatly exaggerated, inasmuch as it, in point of fact, derives its firmest support from the pelvis, and not from the truncated extremity of the femur.

M. Sourier mentions but two cases of *hospital gangrene;* the first, having taken on the *ulcerative* process, had eaten out the entire cicatrix, (amputation of the arm?) and all the pectoral muscles; the second assumed the *pulpy* form, with false membranes and sanious suppuration, but without destruction of the tissues. The patients were pale and anæmic, and suffered from gastro-intestinal derangement, with flabby tongue, loss of appetite, &c. The hot iron, and injections of iodine locally, with quinia and iron-by-hydrogen internally, aided by careful and frequent dressing, saved one of them.

VI. "*Purulent infection,*" says M. Sourier, "is the most common, indeed, I might say, taking an enlarged view, the *single* complication of wounds where immense bodies of men are brought together under surgical treatment. If we consider the fact that the inter-current phenomena, which we have just mentioned, attack exclusively those on whom amputation has been performed, poisoned with their own morbid secretions, and saturated with the emanations of the hospital—if we take into account the persistence with which they reproduce themselves, under various forms, even when such accidents as hæmorrhage, retraction, etc., to which their occurrence had been attributed, have been subdued—how can we fail to see in this pathogenic system, the varying manifestations of an infection general, but identical—of an economy poisoned at the very springs of life?

VII. All great surgeons have been unanimous in recommending immediate amputation in badly comminuted fractures of the inferior extremity, and especially of the thigh. I have taken my exceptions to this precept in a former letter, on the authority of a considerable number of cases of preservation of the limb, observed during the campaign. This capital question of military surgery has elicited the following judicious reflections from M. Sourier:

"When called upon to make up one's mind on such serious questions, it is my opinion," says he, "that it is impossible to inquire too carefully into the nature and extent of the injuries, or to note too precisely the length of time which has elapsed since the reception of the wound. If you have a comminuted fracture, with adherent splinters, containing no foreign bodies, and without very extensive laceration of the soft parts—if the suppuration be moderate in quantity, and laudable in character, and occasions neither chill nor diarrhœa, nor symptoms of absorption—if your patient, otherwise sound and healthy, appears of a cheerful temperament; if the local and climatic influences in which he is placed are propitious,—wait! You may, perhaps, obtain a solid union of the bones.

"If, on the contrary, the fracture is of considerable extent and multiple, with splinters, projectiles, wads, etc., driven deep into the flesh—if the patient is feverish and excited—if the wound is discharging a suspicious and fœtid pus,—amputate without delay, for each day, each hour lost, is so much on the road to a cruel result. To defer is to invite suppuration, hæmorrhage, tetanus, hospital gangrene, or purulent infection; terrible threats, which are constantly hanging over the life of your patient!

"Hesitation, in these circumstances, is death!

"VIII. Twice has the *coxo-femoral disarticulation* seemed to us to be indicated. But, knowing the ill success which, with few exceptions, invariably attended this most serious mutilation in Algeria, in the Crimea, and lastly, in Italy itself, it was with the greatest difficulty that we could bring ourselves to decide upon its performance.

"On the thirty-second day in one case, and the fifty-sixth in the other, the steady progress of an irremediable disease decided us to amputate below the lesser trochanter, notwithstanding the discouraging statistics of the Hôtel des Invalides. The first case recovered; the second died of consecutive hæmorrhage two months after the operation."

We lose more individuals than we save limbs, said Dupuytren. Too often does the surgeon hesitate, disarmed by the consideration of the social position, the age, the shattered hopes of his patient, and see him die with four limbs when he might have lived with three. Certainly, when it comes to cutting off a thigh, it becomes a matter of conscience to calculate, as to the question of expediency, the adverse chances of so serious a mutilation. Still, there is no doubt in my mind that the sixty-three united fractures of the femur, collected at the *Invalides* by M. Hutin, the observations recently made at Milan, the cures which M. Sourier has observed, and our own personal appearance demonstrate, above all cavil, that such fractures, even when comminuted, may be redeemed from the stern sentence of the knife. But who can say that this success, numerically so insignificant, when compared with the grand total of fractures of the thigh by fire-arms, has not been bought at the price of the most lamentable sacrifices?

"I cannot think without feelings of the deepest sadness," exclaims Dr. Sourier, in conclusion, "of a little ward at Cremona assigned to severely wounded Austrians. At such moments, I see those wan, cadaverous faces rise up before me, blanched by exhaustion and a long continuance of purulent absorption, as they implored by signs accompanied by piercing cries, the removal of a limb which we had wished to save, as a last favor to put an end to the pitiable agonies which we were compelled to witness without the power to relieve."

The lessons of this war will determine, it is to be hoped, the important surgical problems which I have simply skimmed over in these hastily written letters. Both science and humanity demand of a weightier pen than mine a service which, in itself, would suffice to render famous the already illustrious name of the Medical Inspector of the Army of Italy.

Yours very cordially. ☞

PARIS, *August* 30*th*, 1859.

REVIEWS AND BIBLIOGRAPHY.

The Institutes of Medicine. By MARTYN PAINE, A.M., M.D., LL.D., Professor of the Institutes of Medicine and Materia Medica in the University of the City of New York; Corresponding Member of the Royal Verein für Heilkunde in Preussen; Corresponding Member of the Royal Medico-Chirurgical Academy of Turin; Corresponding Member of the Gesellschaft für Natur und Heilkunde zu Dresden; Member of the Medical Society of Leipsic; of the Medical Society of Sweden; of the Montreal Natural History Society; and of many other Learned Societies. "All are but Parts of One stupendous Whole; whose body Nature is, and God the soul."—POPE. "Theory is only common sense applied to calculation."—LA PLACE. Seventh Edition. New York: Harper & Brothers. With Notes. September, 1862. 8vo. Pp. 1,130.

This work has been before the profession since 1847. A *towering monument*, as it is, of laborious investigation, vast erudition, and profound reflection, we may well take for granted that it is known to the majority of our readers. Having written a somewhat lengthy notice of one of the earlier editions, we intend on this occasion to take only a bird's-eye view, as it were, of its general outlines.

The Institutes of Medicine are natural inductions of principles and laws from the healthy and morbid phenomena of living [human] beings. They are based upon Solidism and Vitalism. All systems founded on other considerations are spurious, unsatisfactory, and unstable.

To show the consistency of the Institutes of Medicine in all their parts; to examine progressively the fundamental facts in physiology, pathology, and therapeutics; to develop and weave into a system the great principles and laws of organic beings; and to convert the system to practical uses in the preservation of health, and a just, intelligible, and philosophical application of the Materia Medica to morbid states of the body,—is the herculean task which our author proposes to himself. He has adopted an analytical method of discussion, and an arrangement which exhibits the natural relations of the subject in their just order. The object he has kept constantly in view evidently is clearly to represent, completely and comprehensively, the *Philosophy* of Medicine.

In his preliminary remarks he shows that "The immediate objects of physiology are a critical analysis of the vital conditions and results of organic beings, as manifested in different organs, and in their relations to each other. It contemplates organic nature, therefore, in its natural state; and the laws which it obeys are its highest end. Pathology is to the physician the great final object of physiology. It investigates the causes which disturb the physiological conditions, and inquires into the phenomena, and the nature of the vital and structural changes. These, in connection, form the ground-work of Therapeutics, which considers the indications to be fulfilled, and the means and the manner by which they are to be accomplished, and nature thus aided in the process of cure. The Materia Medica comes last, and is the subordinate object of all the rest. It investigates the composition and physical character of the material objects by which the therapeutical intentions are fulfilled, and interrogates especially their relations, as vital and alterative agents, to pathological conditions."

"It will be seen, in our inquiries into the great fundamental points, that the science of medicine is, throughout, a perfectly connected chain; beginning with the laws which govern the modes in which the elements of matter are combined in organic beings,—advancing to the union of organic compounds into cells and tissues,—to the laws which respect the various processes which are conducted by these tissues, and by the organs into which they are combined,—to those laws as affected by the contingencies of disease,—and, lastly, to the laws which regulate the changes through which the morbid states return to the natural conditions of life. All are connected together by intimate dependencies, and are determined by the natural or by the varying states of the vital properties in their operation through material parts."

The physiological world, we are then told, has been lately divided into three schools, viz.: the *Chemical* school, at the head of which stands Liebig, which virtually regards organic nature as a part only of inorganic, endowed with the same properties and governed by the same laws; the *Vitalistic*, of which our author is the special champion, which regards organic and inorganic nature as distinct in their most essential attributes, supposes that each department is governed by properties and laws peculiar to itself, and regards the organic being as fundamentally distinct from the inorganic in its elementary constitution, in the aggregation of its molecules, in the structure of its parts, in its condition as a whole, and in every phenomenon which it evinces; and finally, the *Chemico-vitalistic* school, which takes into consideration the doctrines of both vitalism and chemistry, and discriminatingly assigns some of the phenomena of life to a peculiar vital agent, and others to the action of physical and chemical forces belonging to organic in common with inorganic matter. Our author condemns, and entirely rejects, not only the first, but also the last, of these, which latter makes, he says, a compromise with philosophy, taking, as it does, its rule "*in medio tutissimus ibis*." This chemico-vitalistic school endeavors to form, as it were, a bond of union between the schools of pure vitalism and of pure chemistry—an alliance hinted to be as unnatural as human brains in a block of granite; yet this is the school to which the young student has the greatest chance of becoming the victim; for it is apparently recommended by its conciliatory principle, and by many of the most distinguished members of our profession.

To the author life is not only a distinct entity—distinct from all other things in nature—but a peculiar governing principle or power, with properties, forces, and laws entirely unknown in the inorganic world. While the laboratory is the proper place for the study of the inorganic kingdom, we must go to the organic being itself to learn the nature of the powers and laws by which it is governed. All the labors of physiologico-chemists are useless, and worse than useless. In their invasions upon the science of life, they aspire at a substitution of their ever-fluctuating principles for the profound principles and laws of nature upon which the rich domain of physiology and medicine is securely based, and instead of the latter, to rear up a fabric of medicine upon an imaginary foundation. But their school must fall beneath the weight of its vast errors and corruptions. The world is fast awaking from its spell-bound delusion, and the doctrines of the "reformer" (LIEBIG) will soon be mingled with the same and more original chimeras which did their part in "the dark ages of science." Our author repeatedly seals his determined opposition "even unto death" with the emphatic language here recorded, and sentences like the following: "*Chemistry has been a perfect incubus upon medicine; and the time is not distant when it will have proved, by its own showing, its want of relation to our subject, if it have not done so already.*"—"No department of medicine has anything to hope from chemistry beyond its power of analysis."—"Chemical and mechanical philosophy, as we have already seen, are strangers to the philosophy of medicine."—"At the very threshold, we are met by a barrier which the chemist and physical philosopher cannot pass from one side, nor the physiologist from the other."

Such is the stand-point, and such the intrepid spirit—conscious of the integrity of his motives, with faith in the truth of his tenets, ever ready to battle with opposition—from which and with which Prof. Paine leads his readers step by step onward through the intricacies of the vast range before him:—the INSTITUTIONES MEDICINÆ. First, the various topics of *Physiology*, viz.: the composition of organic beings; their structure; their properties, (vital principle, irritability, sensibility, mobility, vital affinity, vivification, nervous power, properties of mind and instinct;) their functions, (motion, absorption, assimilation, distribution, appropriation, excretion, calorification, generation, sensation, sympathy, functions relative to the mental principle and instinct;) modifications of functions and properties which arise from sex, age, temperament, climate, race, habits, etc.; the relations of organic beings to external objects; and, finally, death;—are taken up in detail, and discussed with special reference to vitalistic doctrines. No opportunity is lost to refute the deductions and arguments of the chemists; and the "Summary Conclusion" is reached that the vital principle lies at the foundation of all the phenomena, and will explain every phenomenon of organic beings. Next, *Pathology*, reviewing (1) the remote causes of disease, (2) the proximate or pathological causes, and (3) the symptoms, is methodically proceeded with. The symptoms, or effects to be employed as guides to the nature and seats of disease, are divided into—1st, Those which are denominated vital signs, and which are independent of physical products. 2d, The changes of motion and other conditions relating to the vessels which are the instruments of disease, but which are independent of structural changes. 3d, The physical products which are comprehended under the denominations of secretions and excretions. 4th, Symptoms of the foregoing nature which are determined or modified by changes of organization, and about which morbid anatomy is interested. 5th, Signs of a physical nature which depend upon either some change of structure, or on the accumulation of fluids, or the presence of some unusual fluid, or other substance, within the body. The various conditions of the pulse, the tongue, the urine, the sweat, the mucus, and the alvine discharges, are specially described in detail. Then follow the pathological indications to be derived from morbid anatomy, the bearings of which are greatly limited; and while comparing the Hippocratic and anatomical or necroscopic schools of medicine, the author vindicates the superiority of the mass of American over the mass of European, especially British, practitioners,—a subject to which allusion is again made in the "Notes." To illustrate the most important principles laid down, the next thirty or forty pages are devoted to the consideration of inflammation and fever: "the two orders of disease, indeed, which make up the great amount of human maladies, and form the great outlets of life." "The few diseases which do not fall under one or the other of the foregoing denominations are least important in a practical sense, and least understood in their pathology. Nevertheless, a knowledge of the principles which apply to the pathology of inflammation and fever will greatly aid our interpretation of the essential changes which constitute the pathological conditions of other affections." Many affections described by other authors, as hyperæmia, hypertrophy, lesions of nutrition, irritation in consequence of loss of blood, etc., etc., are included in the domain of inflammation. Inflammation is always a local disease, while fever affects the system universally; nevertheless, inflammation is often complicated with fever at the invasion of the latter, and may be its exciting, though not its predisposing, cause; and fever rarely exists long without giving rise to inflammation, of which it may be either an exciting cause in organs already predisposed, or may be the predisposing as well as the exciting cause. All these subjects, including also venous congestion (constituted, essentially, by inflammation of the venous tissue,) and venous hæmorhage, (regarded as not the result of a rupture, but a purely vital process, analogous to secretion,) etc., etc., are to be explained properly only by vitalism and solidism. This division of the volume ends with an exposition and refutation of Humoralism. *Therapeutics*, the great ultimate object of all medical inquiries, is now fully reached. Simple in principle and complex in details, it is thoroughly discussed, not only in its general aspects, but in exceedingly numerous special applications to particular diseases and states of disease. In the treatment of disease, we do but substitute one morbid action for another: all remedies of positive virtues are morbific in action, and therefore really operate upon the same principle as the remote causes of disease—the difference being, that the latter impair the recuperative principle more than the former, which substitute pathological conditions less profoundly morbid, and therefore capable of subsiding spontaneously. The cure, therefore, is essentially the work of Nature. As every disease is a succession of pathological changes, it is the object of every successive remedy to introduce a new pathological condition, till that one is attained which is most conducive to a spontaneous subsidence, and hence the importance of applying the right remedies, and in the right doses, and at the right time, and as one remedy prepares the way for another, in a well-regulated consecutive order, and of projecting as far as possible a plan of treatment at its beginning. We endeavor to imitate Nature in her spontaneous efforts at relief, so far as principle is concerned; and since fever and inflammation comprise all the severe forms of disease, and as there is nothing in the results of spontaneous changes which correspond with those induced by tonics and stimulants, we may safely conclude, continues our author, that those practitioners who often resort to that class of agents have but very imperfect views in physiology and pathology, and are astray from the path of Nature. Simplicity of treatment is a ruling principle. No remedial agents are truly specific; predisposing causes often modify a common form of disease in such modes as to require, more or less, the agency of remedies not adapted to the common form; and there is no remedy, however adapted to the cure of any given disease, which will not sometimes fail, and admit of a substitute apparently quite different. Even blood-letting, cathartics, &c., will fail in some cases of inflammation. It should be constantly borne in mind that a tonic, an antiphlogistic, &c., are only such when appropriate to the case before us. It is no uncommon prejudice that certain local and even constitutional forms of disease should be allowed to continue for the prevention of some apprehended greater evil. Thus, the intermittent fever is allowed to persist, that some peccant matter may be concocted and expelled; ulcers are cherished as outlets to vicious humors; &c. But, we are never benefited by the continuance of natural diseases. The sooner we get rid of them, the more shall we insure the chances of prolonged life, enjoy an exemption from corporeal and moral suffering, and manifest our common sense.—Cathartics, astringents, tonics and diffusible stimulants, narcotics, antispasmodics, cinchona and its alkaloids, arsenic, iodine, ergot, emmenagogues, diuretics, expectorants and counter-irritants are then specially investigated, together with the general philosophy of remedial action, (illustrated by the seton, local sedatives, warm poultices, genito-urinary agents, uterine agents, etc., etc.) Lastly, but emphatically not least in either the importance attached to it, the space allotted to it, or the ability concentrated upon its discussion by the author, comes Blood-letting, its influences and *modus operandi*, considered with reference to the practical application of the remedy and the various circumstances of disease. The general conclusions arrived at in regard to the design of direct depletion are as follows: "That in blood-letting five principal objects are contemplated: 1. To reduce the volume of blood. 2. To thus establish a change of action in the capillary blood-vessels. 3. To thus obtain the alterative action of the nervous influence. 4. To reduce the exciting nervous influence attendant on inflammation and fever, whether reflex or direct, that disease shall abate, and that cathartics, counter-irritants, &c., when necessary, may operate without exciting a morbific reflex nervous action. 5. To thus, also, prepare the way for other remedies by promoting their salutary effects and preventing their deleterious, which have equally a reference to the condition of the nervous influence."

An exceedingly elaborate double Index greatly facilitates reference to any particular point, and being in itself a well-digested summary of the author's views, renders the work still more valuable.

The Appendix and Supplement reiterate many of the opinions expressed in the previous text of the volume, and add new illustrations.

In conclusion, we republish, in his own words, the more important of the specifications of his claims. He asserts his claim of originality to:

"1. All that is relative, in principle, to *Reflex Action of the Nervous System* in Pathology and Therapeutics, including the application of antecedent experiments to determine the 'Laws of Sympathy' and of the 'Vital Functions,' as they respect the natural conditions, to all the great problems in those branches of Medicine, so far as the Nervous Influence is involved as a modifying cause; and a systematic *generalization* of the whole subject."

"2. The doctrine of *Modification of the Nervous Power* by the Causes which bring it into action, and according to the nature of each Cause, whether mental or physical, remedial or morbific, external and internal, and through which its *Alterative* influences are exerted in conformity with its various modifications, respectively—regarding, therefore, the Nervous Power as a *Vital Alterative Agent*, and susceptible of an endless variety of changes in *kind* from the influence of exciting causes; being thus rendered, in its extremes of change, either a vital *stimulant* or *sedative*, exerting *alterative* effects, with corresponding results in both the solids and fluids.—The application of this philosophy equally to the cure and production of diseases in all their gradations.

"3. The doctrine and demonstration of the operation of *Remedial Agents* and *Morbific Causes* by *Reflex Action of the Nervous System*, as, also, through the foregoing *modification* of the Nervous Power, and all that is relative to the same action in Pathology and Therapeutics."

"7. Distinction between the agencies of *Reflex Nervous Action* in the *modus operandi* of the Author's group of *Alteratives* and among other denominations of Remedies—an important consideration, by which the *gradual* operation of Remedies through *Reflex Nervous Action* is rendered clearly intelligible."

"8. All embraced in this work, and in the Medical and Physiological Commentaries, upon the *Influences and Modus Operanki of* LOSS OF BLOOD, (whether in General Blood-letting or Leeching,) which are interpreted by the Author upon purely Physiological Laws, and mainly through *Reflex Action of the Nervous System*."

"13. The proof and reasoning embraced in these Institutes, and in the Medical and Physiological Commentaries, and other works, in behalf of VITAL SOLIDISM, as applied to Physiology, Pathology, and Therapeutics, and in opposition to the Chemical hypotheses."

"17. Analysis and elaboration of the *Properties of Life*, as contained in this work."

"22. Demonstration of the dependence of *Digestion* upon Vital Laws, and to the exclusion of the Chemical, as contained in this work, and in the Medical and Physiological Commentaries."

"27. The distinction between *Inflammation* and *Fever*, and what is most essential in proving an active condition of the immediate instruments of Inflammation, and the dependence of its different stages, and of all its phases and products, upon Vital Laws, as embraced in these Institutes, and in the Medical and Physiological Commentaries."

"37. A *Therapeutical Arrangement of the Materia Medica* upon Physiological principles, and in the order of the relative therapeutical value of the different substances, and as applied to particular forms of disease.

"38. All that is relative to the Substantive Existence and Physiology of the SOUL and INSTINCTIVE PRINCIPLE, as embraced in this work, and in the former Essay upon those subjects."

Whether adopting or rejecting the peculiar views of Dr. Paine;

whether admitting or contesting the correctness of either his premises or conclusions, no thoughtful reader can lay down his volume without feeling that he parts company with one of the master-minds of our profession. Dr. Paine recognized the truth of certain doctrines at a time when they were almost universally regarded as false; he became their expounder; in the face of overwhelming opposition, their unvanquished defender; he battled bravely, long and well; he was RIGHT in what he affirmed, but unfortunately, in the heroic struggle, it was not long before he was wrong in what he denied; one of the co-ordinate sources of knowledge had become to him the "*Grand Central Sun*," and all lights emanating from other luminaries, *ignes fatui* arising but from error, superstition, and corruption, and calculated but to mislead. We cannot but admit that there is some ground for the judgment of the reviewer, who would denounce the author's platform as one-sided, partisan, and proscriptive, or who would look upon his doctrines and arguments as to a great extent invalidated by "prejudices against the progress of science" and "obstinate adherence to errors;" but the marvelous assiduity with which his details are collected, and the consummate skill with which they are arranged and used; his great learning, his acute reasoning, his uncompromising consistency; the vast importance of the subjects he so ably discusses, the comprehensiveness of the doctrines he so boldly advances and so earnestly defends, and the noble "*courage de son opinion*" he so candidly shows in the records of his own practice—no one can justly deny, or fail profoundly to respect. Incontrovertibly Dr. Paine has proved himself a *medical philosopher*, and we sincerely recommend a perusal of his work to every thinking, educated man, warning him, however, against falling into the error of "Exclusivism."

The publishers have gotten up the volume in splendid style. ⁂

We greatly regret that we have not space to notice two valuable text-books recently issued by Lippincott & Co., and authorized by the Surgeon-General for the use of Medical Officers in the Army, entitled respectively—"The Hospital Steward's Manual for the Instruction of Hospital Stewards," etc., by Joseph Janvier Woodward, M.D., and the "Anatomy of the Arteries of the Human Body, Descriptive and Surgical, with the Descriptive Anatomy of the Heart," by John Hatch Power, M.D. The action of General Hammond is enough to guarantee the value of matter, while the press-mark of "J. B. Lippincott & Co." is a sufficient assurance of the beauty of the manner.

The second volume of Prof. Frerich's "Clinical Treatise on the Diseases of the Liver" is also before us, and had we continued to edit the MONTHLY, should have received as extended a notice as its own intrinsic merits and the praiseworthy efforts of the New Sydenham Society to enrich the English language with the wealth of foreign research deserve. ☞

EDITORIAL AND MISCELLANEOUS.

— We cannot refrain from placing upon our pages, although it is not at the first glance a medical document, the following General Order of the President, which will rank on the page of history with the noblest utterances of the Christian patriot and the enlightened ruler:

EXECUTIVE MANSION, *Washington, Nov.* 15, 1862.

The President, Commander-in-Chief of the Army and Navy, desires and enjoins the orderly observance of the Sabbath by the officers and men in the military and naval service. The importance for man and beast of the prescribed weekly rest, the sacred rights of Christian soldiers and sailors, a becoming deference to the best sentiments of a Christian people, and a due regard for the Divine Will, demand that Sunday labor in the army and navy be reduced to the measure of strict necessity. The discipline and character of the National forces should not suffer, nor the cause they defend be imperiled, by the profanation of the day or name of the Most High. "At this time of public distress," adopting the words of Washington in 1776, "men may find enough to do in the service of God and their country, without abandoning themselves to vice and immorality." The first general order issued by the Father of his Country, after the Declaration of Independence, indicates the spirit in which our institutions were founded and should ever be defended: "*The General hopes and trusts that every officer and man will endeavor to live and act as becomes a Christian soldier, defending the dearest rights and liberties of his country.*"

ABRAHAM LINCOLN.

Not alone a high moral sense, not alone a decent regard for the opinions of a great religious community, or respect for the scruples of thousands of Christian soldiers, are apparent as the moving springs of this earnest injunction, but in addition to all these worthy motives, a profound conviction of the absolute necessity to every living being of a periodic rest in order to the maintenance of such a degree of vigor as shall render its labor most available. We are confident that its rigid enforcement will add essentially to the mere physical strength of the army, while its influence as a moral agent in promoting good order, discipline and self-respect among the rank and file, will be of incalculable value.

No better proof of the disastrous effects of unremitting toil, without the relief of the seventh-day respite, need be asked than that afforded by the two learned professions whose duties necessarily deprive them of it—the clerical and our own. It is difficult to find either the pastor of a large city church, or a physician in a first-class practice, who does not, every few years, generally oftener than once in seven, find himself broken down, and compelled to take the relaxation afforded by a trip to Europe or the West Indies, if he would preserve his life. This is now an every-day occurrence. Scarce a steamer leaves our shores for the Old World but carries out a weary health-seeker belonging to one or other of these callings. Our clerical friends preponderate for two reasons: First, because they are more completely deprived of their day of rest than we; secondly, because the constant exercise, open-air life, and variety of material for thought which the practice of medicine affords, render it, *per se*, the most conducive to health of any vocation of civilized life.

In the case of the clergy, the evil is one which is innate and inseparable from their profession. We can only recognize and lament it. But in our own craft, while it is, of course, to a certain extent, a necessity, yet it is not so, we confidently maintain, to nearly so great a degree as the good-nature, or indifference, or willful perversion of many of our brethren make it.

While it is the duty of the physician to answer any call of emergency which may present itself on that day, as on any other, and to continue to visit any patient whom he has considered it necessary to see daily, it is not his duty to submit to the imposition of those who treasure up their bodily ills through the week that they may "give up and send for the doctor on Sunday." Every physician knows how constantly this is done, and how often he is called to see patients on Sunday who send for him no other day in the week.

Mr. Soul-in-his-Ledger's wife has an affection which will necessitate a serious operation. Next to his ledger, Mr. S. dotes on his wife, and is naturally most anxious to be present himself on the trying occasion. But how can he be away from the counting-house an entire day? It is a perplexing question. He meditates it long and painfully. At last light breaks in—he sees his way out of the difficulty. He will have the operation performed on Sunday. It strikes him as it never struck him before, what a blessing Sunday is! So he announces to the family physician, Dr. Impecunious, his determination. The doctor has made some other arrangement, perhaps, by which he hopes to pass a portion of the day with his family. But Mr. Soul-in-his-Ledger is a rich man, and the doctor cannot afford to lose his patronage: so he accedes to the arrangement with a smiling face, as though it were just what he most wished, and he and Dr. Hackwell, the surgeon, and the three or four physicians who assist him, have several hours taken out of their day of rest, and devoted to a matter which taxes all their faculties to the utmost. Now there is but one way of demonstrating to Mr. Soul-in-his-Ledger that these professional gentlemen have quite as much right to their day of rest as he to his, and that is by the *argumentum ad sacculum*—an *appeal to his pocket.* If it were a generally understood thing that physicians charged a double fee for a Sunday visit or a Sunday operation, we are confident that they would be allowed to have the day much more to themselves, and we can see no good and sufficient reason why the profession throughout the country is not perfectly competent to adopt such a rule. ☞

—NEW YORK COUNTY MEDICAL SOCIETY—*Alf. Underhill, M.D.*, President, *Guido Furman, M.D.*, Secretary.—The regular meeting of this Society was held on Monday evening, Dec. 1st, 1862, at the College of Physicians and Surgeons. The President remarked that the Society was now in a working condition, and hoped that the different members who intended to present cases or read papers before the Society, would notify him or the Secretary of their intention to do so. It was suggested that they should be handed in early enough to have notice of them given in the medical journals of this city.

The prevalence of diphtheria being part of the report presented by the Committee on Disease, a discussion of it was entered upon by Drs. Bulkley, Stone, Henschel, and others. It will be the leading subject for discussion at the next meeting. Dr. Thomson concluded the reading of his paper. By special permission he is permitted to publish it, and it will be embodied in Dr. Hammond's (Surgeon-General of the U. S. Army) work, now in progress of preparation.

Dr. Henschel read part of a paper on typhus. Considering this disease a blood-poisoning, with occasional localization in different organs of the body, he supported the theory of its cyclical nature. Hence, if it has not proven fatal by its overpowering influence on one of the nobler organs, the system must of necessity return to health. He then gave the different forms and localizations of this disease, with their treatment, depending chiefly on the stimulating method, and confining the adhibition of large doses of calomel to the enteric form with inconsiderable or no diarrhœa.

Dr. Bulkley remarked that the credit of discovering prolonged expiration, referred to by Dr. Thomson in his paper, as a sign of incipient tubercle, is due to one of our own countrymen, namely: to the son of Dr. John Jackson, of Boston, who pointed it out to Louis of Paris. This distinguished auscultator speaks of it as a valued sign.

— The present number closes the *eighteenth* volume of the MONTHLY, and with it the publication of the journal is for the present *suspended.*

The sole cause of this suspension is the continued absence of the Editor, which prevents him from giving any attention to his editorial duties, or—as he holds the title of the journal—from supervising its business arrangements.

The absence of the Editor already dates from July, 1861, since which time the journal has been conducted by his friends Dr. Louis Elsberg and Dr. Benjamin Lee. Dr. Elsberg kindly offered to superintend the issue of the journal during the latter half of 1861, and the volumes of the current year (1862) are completed under the able editorial supervision of Dr. Lee. During last summer Dr. Lee was suddenly called away, and was absent for three months, doing duty in the field as Surgeon to the 22d Regiment N. Y. M., when the liberal services of Dr. Elsberg were again devoted to the MONTHLY.

Since 1857, when the present Editor took upon himself the toils and pleasures of journalism, he has been associated with Dr. E. H. Parker—the first editor of the journal—and Dr. L. H. Steiner. As Dr. Parker soon after removed from the city, and as Dr. Steiner's residence was in Maryland, neither of his colleagues could give their personal attention to the journal. This fact, and the uncertainty attending any arrangements which could be made for the continued publication of the MONTHLY, under present circumstances, has decided the Editor to adopt the course herewith announced.

To his editorial colleagues, who have so cordially assisted him throughout his editorial career, the Editor desires here to express his thankful acknowledgments.

From the pleasant associations with the various medical journals of the country, and from his periodical interviews with the subscribers of the MONTHLY throughout the Union, he temporarily parts with much regret. With the cessation of hostilities, with retiring war, with returning peace, he hopes to resume his labors, and he confidently trusts that the pleasant relations which for many years have existed between himself, the editorial corps of his profession, and the subscribers to the MONTHLY, may be speedily and happily renewed.

J. H. DOUGLAS.